DUPLICATE

UNIVERSITY OF MINNESOTA RECEIVED MAR 20 1958

VIRGINIA MEDICAL MONTHLY

Official Publication of the Medical Society of Virginia

VOL. 69. October, 1942 No. 10.

CONTENTS

Guest Editorial. Gregory Zilboorg, M.D., New York City ---- 533

How We Have Treated Graves' Disease During a Quarter Century. J. H. Means, M.D., Boston, Mass. ---- 535

Report of an Epidemic of an Acute Respiratory Infection with Pneumonitis. Alex. F. Robertson, Jr., M.D., Staunton, Va. ---- 542

The Hormonal Treatment of Prostatic Hypertrophy and Cancer: A Review and Initial Clinical Experiences. Linwood D. Keyser, M.D., F.A.C.S., Roanoke, Va. ---- 544

Benign Bronchial Adenoma: Report of a Peripheral Lesion of the Right Middle Lobe, Cured by Partial Lobectomy. Lemuel E. Mayo, Jr., M.D., Portsmouth, Va. ---- 550

Present Day Status of Anesthesia. Leo V. Hand, M.D., Boston, Mass. 554

Partial Gastrectomy for Chronic Ulcer. M. K. King, M.D., F.A.C.S., Norfolk, Va. ---- 563

Indications for Terminating Artificial Pneumothorax. C. P. Cake, M.D., Washington, D. C. ---- 566

Stones in Female Urethra. W. Lloyd Eastlack, M.D., South Boston, Va. ---- 569

Current Information on Syphilis. Committee on Syphilis Control, Medical Society of Virginia ---- 571

Mental Hygiene Activities ---- 574

Case Report of Maternal Death. Maternal Health Committee, Medical Society of Virginia ---- 576

Continued on Page 4

Annual Meeting—Medical Society of Virginia
Roanoke, October 5, 6 and 7, 1942

LET'S GO! DOUBLE TIME

● The Army's carefully planned routine soon enables the rookie to put in a full day at "double time" without ill effects. But for the civilian "double time" living often results in faulty health habits which you as a physician are called upon to correct.

When constipation exists consider the advantages of Petrogalar* as an aid in the restoration of normal bowel movement. Its pleasant taste and gentle, consistent action are acceptable to even the "fussiest" patients.

Petrogalar is available in five different types to afford a choice of medication best suited to the individual patient.

FOR THE TREATMENT OF CONSTIPATION

Petrogalar

*Reg. U. S. Pat. Off. Petrogalar is an aqueous suspension of pure mineral oil each 100 cc. of which contains 65 cc. pure mineral oil suspended in an aqueous jelly containing agar and acacia.

Petrogalar Laboratories, Inc. • 8134 McCormick Boulevard • Chicago, Illinois

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

The Estate of
Dr. Marshall J. Payne

DUOSULFON OINTMENT, "Haskell"

(12.5% each of sulfanilamide and sulfathiazole
in a readily absorbable, greaseless base)

Offers Definite Advantages for the Topical Use of Sulfonamides.

CCH

CHARLES C. HASKELL & CO., Inc.
RICHMOND, VIRGINIA

XUM

Surgical-Laboratory Repair Service

Box 240

RICHMOND, VIRGINIA

Disabilities occasioned by war are covered in full.
86c out of each $1.00 gross income used for members benefit
PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION
Hospital, Accident, Sickness
INSURANCE
For thical Practitioners Exclusively
(57,000 POLICIES IN FORCE)

Liberal Hospital Expense Coverage	For $10.00 per year
$5,000.00 accidental death $25.00 weekly indemnity, accident and sickness	For $32.00 per year
$10,000.00 accidental death $50.00 weekly indemnity, accident and sickness	For $64.00 per year
$15,000.00 accidental death $75.00 weekly indemnity, accident and sickness	For $96.00 per year

40 years under the same management
$2,220,000 INVESTED ASSETS
$10,750,000 PAID FOR CLAIMS
$200,000 deposited with State of Nebraska for protection of our members.
Disability need not be incurred in line of duty—benefits from the beginning day of disability.
Send for applications, Doctor, to
400 First National Bank Building - Omaha, Nebraska

GARST BROS. DAIRY INC.
DIAL 5501

SOFTCURD HOMOGENIZED
VITEX VITAMIN D MILK
BABY FORMULA
MILK - BUTTER - CHEESE
"Roanoke's Most Modern Dairy"

LABORATORY CONTROL
FOR YOUR PROTECTION
DIAL 5502

CONTENTS
(Continued)

Public Health Statistics ---- 577
Military Medicine ---- 578
Book Announcements ---- 579
Editorials ---- 580
Societies ---- 583
News ---- 584
Obituaries ---- 588

INDEX TO ADVERTISERS—Page 6
Entered as Second Class Matter at the Postoffice, Richmond, Va.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

The American Way

is peace, prosperity, and goodwill toward our fellow man—to invest our time in educating and learning; and our money in good citizens and fine institutions.

One of the finest institutions of your State is Richmond Hotels Incorporated, one that maintains the highest modern hotel standards . . . one that combines the hospitality and charm of the old and the convenience and comfort of the new.

John Marshall Murphy

William Byrd Richmond

Richmond Hotels Incorporated

REVISED PRICES FOR REPRINTS

of Articles Appearing in

The Virginia Medical Monthly

Trimmed Size 5½x8½ in. Type Page 3x6 in.

Minimum Order 100 Copies

	100	250	500	1,000	2,000
4 pp.	$ 3.60	$ 4.00	$ 4.85	$ 5.90	$ 8.25
8 "	6.45	7.35	8.00	10.35	14.25
12 "	9.50	10.85	12.15	15.55	22.90
16 "	9.85	11.70	13.40	17.15	24.45
20 "	12.10	14.40	16.35	20.00	29.90
24 "	12.80	15.60	17.55	23.10	31.90
32 "	16.90	20.60	23.95	33.65	45.50
Extra for Covers	4.00	4.60	6.35	7.60	11.40
Envelopes: Printed	2.75	4.00	5.75	8.25	14.50
Blank	.70	1.65	3.00	5.00	10.00

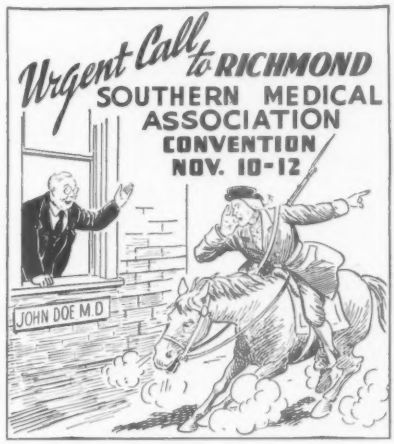
Prices F.O.B. Richmond, Va. Shipments will be sent postpaid if check sent with order.

Orders must be placed before type is distributed.

WILLIAMS PRINTING CO.

11-13-15 North 14th Street

RICHMOND, VIRGINIA



PHYSICIANS of the South have an **urgent call** to Richmond for the annual meeting of the **Southern Medical Association,** Tuesday, Wednesday and Thursday, November 10-11-12 — **a great wartime meeting.** In the general clinical sessions, the twenty sections, the four independent medical societies meeting conjointly and the scientific and technical exhibits, every phase of medicine and surgery will be covered—**the last word in modern, practical, scientific medicine and surgery.** Addresses and papers will be given by distinguished physicians not only from the South but from other parts of the United States.

REGARDLESS of what any physician may be interested in, regardless of how general or how limited his interest, there will be at Richmond a program to challenge that interest and make it worth-while for him to attend.

ALL MEMBERS of State and County medical societies in the South are cordially invited to attend. And all members of state and county medical societies in the South **should be and can be** members of the Southern Medical Association. The annual dues of $4.00 include the Southern Medical Journal, a journal valuable to physicians of the South, one that each should have on his reading table.

SOUTHERN MEDICAL ASSOCIATION

Empire Building

BIRMINGHAM, ALABAMA

XUM

"This is the way to feel refreshed"

Pause at the familiar red cooler for ice-cold Coca-Cola. Its life, sparkle and delicious taste will give you the real meaning of *refreshment.*

INDEX TO ADVERTISERS

Borden's Prescription Products Division	11
Brewing Industry Foundation	7
Burhans Optical Co., Inc., E. E.	9
Camel Cigarettes	8
Coca-Cola	6
Cook County Graduate School of Medicine	21
Eli Lilly and Company	14
Garst Bros Dairy, Inc.	4
Gilliland Laboratories, Inc., The	24
Gill Memorial Eye, Ear and Throat Hospital, Inc.	18
Haskell & Co., Inc., Charles C.	3
Jefferson Hospital and Training School for Nurses	16
John Marshall—Murphy—Wm. Byrd—Richmond	5
Johnston-Willis Hospital	19
Lederle Laboratories, Inc.	23
McGuire Clinic	15
Mead Johnson & Co.	28
Medical Examining Board of Virginia, The	10
Medical College of Virginia	19
Medical Society of Virginia	21
New York Polytechnic Medical School and Hospital	21
Parke, Davis & Co.	25
Peoples Service Drug Stores	9
Petrogalar Laboratories, Inc.	2
Philip Morris & Co., Ltd., Inc.	13
Physicians Casualty Ass'n—Physicians Health Ass'n	4
Pine Crest Health Resort	17
Powers & Anderson	22
Saint Albans Sanatorium	19
Smith, Kline & French Laboratories	12
Southern Medical Association	5
Southern Pines Sanitarium	20
Spencer Corset Co., The	10
Squibb & Sons, E. R.	26
St. Elizabeth's Hospital	16
Stuart Circle Hospital	17
Surgical-Laboratory Repair Service	4
Thalhimers	9
Tucker Hospital	15
Valentine Company, Inc.	10
Virginia Engraving Co.	10
Westbrook Sanatorium	18
Williams Printing Company	5
Williams Printing Company, The	22
Wyeth & Brother, Inc., John	27

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

MORALE IS A LOT OF LITTLE THINGS

(as you, Doctor, know better than most)

THERE'S MARY in her new Fall hat . . . looking young and like a bride again.

"Sa-a-ay!" Joe says, "You ought to be in pictures!"

And that's worth more than orchids—to Mary. That's one of the little things that make big differences to all of us.

Little things . . . nice trifles . . . simple pleasures . . . that make your good days better, help you through the bad ones. That's what keeps you smiling. That's morale.

★ ★ ★

It happens that millions of Americans attach a special value to their right to enjoy a refreshing glass of beer . . . in the company of good friends . . . with wholesome American food . . . as a beverage of moderation after a good day's work.

A small thing, surely—not of crucial importance to any of us.

And yet—morale is a lot of little things like this. Little things that help to lift the spirits . . . keep up the courage.

And, after all, aren't they among the things we fight for?

BREWING INDUSTRY FOUNDATION

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

THE NEW APPROACH TO ADJUSTMENTS IN

Smoking Hygiene

THE relationship of nicotine intake to certain sub-clinical symptoms is of interest to the physician.

Time was when clinical observation in such cases was difficult. Patients were reluctant to fall in with limitations on smoking.

Now your recommendation of slow-burning Camels* is a simple step towards securing this cooperation. Millions have found an added "pleasure factor" in Camel's special mildness and unusually fine taste.

In anticipation of more accurate data when adjusting smoking hygiene, we suggest that you keep a separate file of these case histories. This may lead to interesting conclusions.

★

**The Military Surgeon, Vol. 89, No. 1, p. 5, July, 1941*
J.A.M.A., 93:1110—October 12, 1929
Brückner, H.— Die Biochemie des Tabaks, 1936

★

"THE CIGARETTE, THE SOLDIER, AND THE PHYSICIAN," The Military Surgeon, July, 1941. Reprint available. Write Camel Cigarettes, Medical Relations Division, 1 Pershing Square, New York City.

Camel THE CIGARETTE OF COSTLIER TOBACCOS

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

CAMP SUPPORTS

fitted according to
Doctors prescriptions

General Supports
Sacro Iliac
Ptosis
Maternity

Our fitter skillfully trained
in the CAMP school

Corset Dept.
Third Floor

THALHIMERS
Richmond Virginia

THREE IMPORTANT MEN IN MEDICAL CARE OF THE EYES

THE GENERAL PRACTITIONER
The general practitioner is one of the triumvirate who care for the eyes. He knows that eye strain may be one of the causes of ocular discomfort, nerves, and headaches. When an eye examination seems advisable, or when glasses are essential for eye and general health, improvement of vision, and relief of muscular disorders, he directs his patient to an eye physician. The general practitioner knows the difference between a medical and non-medical eye examination.

THE EYE PHYSICIAN
The eye physician has dedicated his life to careful examination and care of ocular disorders, but he always considers them in relation to general health because he is a medical graduate. He is sometimes able to increase eye comfort and efficiency without prescribing glasses, or he may suggest that they be used only occasionally. When he prescribes glasses he is careful to see that his prescription is accurately filled so that the patient receives the maximum benefit from his glasses.

THE GUILD OPTICIAN
The guild optician, in turn, is a craftsman who, from the eye physician's prescription plan creates glasses of which the eye physician and general practitioner can be proud.

℞ { GENERAL PRACTITIONER / EYE PHYSICIAN / GUILD OPTICIAN } = GOOD EYE CARE

In Virginia Your Guild Optician Is:

E. E. BURHANS OPTICAL CO., INC.
PRESCRIPTION OPTICIANS
5TH FLOOR, NEW MONROE BLDG.
254 GRANBY ST. NORFOLK, VA.

FOR VICTORY

BUY
UNITED
STATES
DEFENSE
BONDS
STAMPS

An Emblem of Service

PEOPLES SERVICE DRUG STORES

Every Prescription Double-Checked

Alexandria
Bristol
Clarendon
Danville
Fredericksburg
Harrisonburg
Newport News
Norfolk
Petersburg
Portsmouth
Richmond
Roanoke
Staunton
Suffolk
Winchester

XUM

VALENTINE'S

High-Protein Mixture

has proven helpful when you desire to control the protein intake.

This mixture is a combination of beef-and-liver-protein (74%) with the addition of salt and celery seed, contains 116 calories per ounce and is in a powdered form which may be suspended in a liquid or mixed with other foods.

The digestibility of this beef and liver concentrate compared very favorably with more common meats.*

*"Gastric Digestion" by M. B. Levin, M.D., and S. Raffel, Sc.D. Annals of of Internal Medicine, *8*, 865 (1935).

VALENTINE COMPANY, INC.
RICHMOND, VIRGINIA

The Medical Examining Board of Virginia

WILL HOLD ITS NEXT MEETING IN RICHMOND, DECEMBER, 1942. All applications must be complete in the hands of the Secretary at least ten days in advance. For further information, write Dr. J. W. Preston, Secretary-Treasurer, Roanoke, Va., or Dr. P. W. Boyd, President, Winchester, Va.

VIRGINIA ENGRAVING Co

Photo Engravers

101 Governor St.
Richmond, Va.

PLATES FOR LINE AND HALFTONE PRINTING

DRAWINGS — RETOUCHING

HAVE YOU PATIENTS

With Any of These Conditions?

Hernia?

Enteroptosis with Symptoms?

Sacro-iliac or Lumbo-sacral Sprain?

Movable Kidney?

Post-Operative Conditions?

Maternity or Post-Partum Conditions?

Breast Conditions?

Spinal Conditions?

Send for Free Booklet offered below

Spencer Supporting Corset, shown open, revealing inner abdominal support. This support is adjustable from outside of corset *to whatever degree of support is desired.*

● When you prescribe a Spencer Support you are assured it will meet your specific requirements, as well as the patient's figure-needs, *because* it will be individually designed, cut and made for the one patient who is to wear it. In addition, it will improve the general health of the patient by means of *posture correction.*

Spencers are non-elastic, light in weight, flexible, perfectly comfortable and easily laundered. They are exceptionally durable and are guaranteed NEVER to lose their shape. (A support that stretches or yields under strain loses its effectiveness.)

● For service at your office, hospital or patient's home look in telephone book under "Spencer Corsetiere" or write direct to us.

SPENCER *INDIVIDUALLY DESIGNED*

Abdominal, Back and Breast Supports

SPENCER, INCORPORATED,
137 Derby Ave., New Haven, Conn.
In Canada: Rock Island, Quebec.
In England: Spencer (Banbury) Ltd., Banbury, Oxon.

Please send me booklet, "How Spencer Supports Aid the Doctor's Treatment."

M.D.

Address X-5

Why Biolac plays an important part in wartime practice

IN THESE DAYS of overwork, you need every minute you can get.

Biolac, because it is a *complete* infant formula, is an important timesaver for many doctors. It saves valuable time in computing feeding directions.

Biolac provides completely for all the nutritional requirements of the normal infant *except* Vitamin C. And it supplies all these food elements in amounts that equal or exceed recognized requirements for optimal growth and health. (See chart below.)

Not only can Biolac save *you* sorely needed time. Biolac formulas are so simple to prepare—requiring only dilution with boiled water as you prescribe—that the busy mother's formula-mixing time is cut to a fraction, as are chances of formula errors and contamination.

For professional information about Biolac, write Borden's Prescription Products Division, 350 Madison Avenue, New York, N. Y.

• *Biolac is prepared from whole milk, skim milk, lactose, Vitamin B_1, concentrate of Vitamins A and D from cod liver oil, and ferric citrate. It is evaporated, homogenized, and sterilized.*

HOW BIOLAC FEEDINGS COMPARE WITH ESTABLISHED REQUIREMENTS

	RECOGNIZED STANDARDS	BIOLAC FEEDINGS
PROTEIN (gms./lb. body weight)	1.4 to 1.8	2.2
CALCIUM (gms./day)	1.0	1.0
IRON (mgms./100 calories)	0.75	1.25
VITAMIN A (U.S.P. Units/day)	1500.	2500.
VITAMIN B_1 (U.S.P. Units/day)	83.	85.
VITAMIN B_2 (mgms./day)	0.5	2.
VITAMIN D (U.S.P. Units/100 calories)	50.	83.

NO LACK IN

BIOLAC

Borden's complete infant formula

Visit Our Booth No. 14 at the Roanoke Meeting.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

When depression accompanies more fundamental pathology

In many patients, depression may occur as an accompaniment of some more fundamental pathology, either organic or psychogenic. In such cases, the physician should bear in mind that, while Benzedrine Sulfate will not affect the underlying condition, its stimulatory effects may help to alleviate the concomitant depression which so often interferes with the management of the case.

Benzedrine Sulfate Tablets

Benzedrine Sulfate is primarily useful in depressions characterized by apathy and psychomotor retardation, but is contraindicated in patients manifesting anxiety, hyperexcitability, or restlessness.

The use of Benzedrine Sulfate by normals should not be permitted; it should always be administered under the careful supervision of a physician; and depressive psychopathic cases should be institutionalized.

In treating depressed patients with Benzedrine Sulfate, the physician should bear in mind that any drug which produces pleasant or euphoric effects may prove to be habit forming—especially in unstable or neurotic individuals.

SMITH, KLINE & FRENCH LABORATORIES, PHILADELPHIA, PA.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

INTERESTED IN CIGARETTE ADVERTISING?

Words, claims, clever advertising do sell plenty of products. But obviously they do not change the product itself.

That PHILIP MORRIS are less irritating to the nose and throat is not a claim. It is the result of a difference in manufacture, *proved** advantageous over and over again.

But why not make your *own* tests? Why not *try* PHILIP MORRIS on your patients who smoke, and *confirm* the effects for yourself.

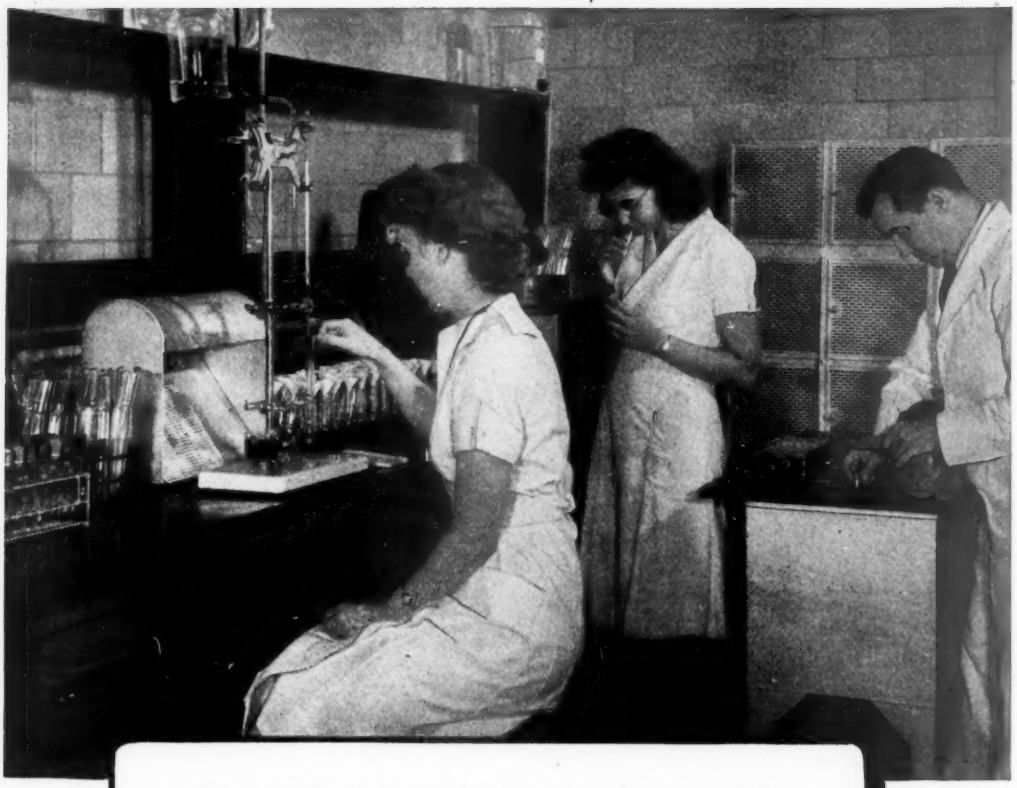
PHILIP MORRIS

PHILIP MORRIS & CO., LTD., INC.
119 FIFTH AVENUE, N. Y.

* *Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60

TO PHYSICIANS WHO SMOKE A PIPE: We suggest an unusually fine new blend—COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

XUM



THE ART OF DOING THINGS WELL

THE WELL-BEING of hundreds of thousands of diabetic patients would be disturbed if the strength of lots of Iletin (Insulin, Lilly) should vary from the potency stated on the label. Uniformity is assured by vigilant testing—tests of crude materials, tests to control processing, tests for purity, sterility, and stability. Data for the standardization of one master lot of Iletin (Insulin, Lilly) may aggregate convulsion tests on several thousand mice and blood-sugar curves of one or two thousand rabbits. It is estimated that more than a million blood-sugar determinations have been made in the twenty years of Insulin testing—another example of the art of doing things well.

ETHICAL PRODUCTS OF RESEARCH * Lilly * FOR PRESCRIPTION USE

Eli Lilly and Company

PRINCIPAL OFFICES AND LABORATORIES, INDIANAPOLIS, INDIANA, U.S.A.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

Virginia Medical Monthly

Official Publication of the Medical Society of Virginia

Vol. 69, No. 10.
WHOLE No. 1084.

RICHMOND, VA., OCTOBER, 1942.

$2.00 A YEAR
25 CENTS A COPY

Guest Editorial

The Doctor and Tomorrow

WHEN the forces of a nation are mobilized to combat the enemy, the physician, like any other citizen, responds to the call and takes his place in the ranks of those who are ready to sacrifice their lives. As this sacrifice is offered and as every muscle becomes tense in the battle for victory and for ultimate peace, the role of the physician is singularly different from that of any other individual under his respective national flag. The soldier is there to overpower the enemy; whatever his ultimate and lofty objective, his immediate task and relentless goal is to destroy the enemy. The man at the lathe works hard making planes and guns and tanks to bring about victory and peace, but his major and immediate task is to make bombs that explode and destroy well, guns that shoot and kill well, tanks that rip through the enemy's ranks and roll over their tents and trenches and resisting machinery and bodies.

It is one of the greatest tragedies of mankind that from time to time we are forced to abandon our peaceful aspirations for tools of combat and destruction. If it is true that at the beginning there was the Word, the word itself becomes propaganda, a tool for hatred and for destruction of the enemy. All this is inevitable, relentless, unavoidable; the peremptory hand of history must guide us through a period of animosity and destruction of human life and many human values. This spirit of destruction engulfs not only the soldier, the factory worker, the public leader, but even the minister of the Gospel. He too—as a man, as a spiritual guide, and as a citizen—wants victory, and he must join us in our efforts to win the battle. He may pray for the salvation of the souls of all the fallen—our own and the enemy alike—but while walking among the living he staunchly gives spiritual comfort only to those who are fighting the enemy. He too must wish the complete destruction of the latter, as we all do.

The physician as a loyal citizen is naturally no different, but his task, his actual work, is totally different. Even in the midst of battle, of the most frightful destruction of human lives, his war effort as a citizen and soldier goes hand in hand with an unremitting effort to save human life. As a physician, not only does he not shoot, but he draws no line between enemy and friend. He would clean and close the wound of a prisoner from the enemy ranks with the same care and earnestness as he would that of one of our own soldiers. He truly ministers to the enemy even as a brother.

This aspect of the physician's role is more than a mere sentimental, humanitarian interlude in the midst of the horrors of war; it is more than a self-serving guirland of humanistic distinction amidst universal hatred. It is a mark of profound cultural importance. For in the wake of all wars, throughout the history of mankind, there is a period of hatred and distrust among men; our cultural values cannot help but be subject to considerable trials and partial deterioration. In war man learns to sacrifice

XUM

heroically his own life, but he does not easily learn to obliterate the distinction between enemy and friend for a long time after the guns are silenced and the battlefields cleared of débris. This global war, which has engulfed the world and invaded every home and hamlet, will more than any other war leave deep scars on our body cultural. When the signal of peace is sounded, we may be a very long time relearning the many values we had to unlearn before we could fight and win and hold the peace.

Among those who will have to unlearn the least, and who will therefore be better prepared to reteach, the physician will occupy the leading place. This he will do not by virtue of the fact that he is made of a different and saintlier fiber—for he is as weak and as human as any man—but by virtue of the very nature of his work. The philosopher will be less prepared for the task of restoration of human values, because the philosopher is only as strong as the wave of history that carries him. Nor will the scientist, valuable as he is, be better prepared, for the scientist in this total war will have been a combatant as much as any other man. The physicist or the chemist will have used his art and skill and knowledge exclusively in the service of actual destruction; he will have learned and taught the use of the "death ray" or of a new, more effective explosive. It will take him time before he shakes off the orientation imposed upon him by the exigencies of war.

The physician alone will have had the experience of constantly focusing his attention and bending his efforts on saving the lives of friend and enemy alike. In this total war in which no one is spared and no one may be permitted to deviate from the path of ultimate and total victory, the physician is apparently called upon to play a more important cultural role than ever before. The very task with which he is charged makes him the true organic carrier of some of the major cultural values which are scorched and wounded and fractured in the course of battle.

The physician's role looms large and his task immense; one wonders whether his public role in times to come will not be greater than that of any other profession. The engineer and the architect will be needed to be sure—but these will appear, for humanity recovers most rapidly in the material aspects of its life. The artist will be needed to be sure—but he will be born soon, because humanity emerges quickly from the darkness of the tortures which history imposes upon it, and it rises readily to dream and to play with its own imagination. But a far greater need, that of restoring the value of human life, individual and communal, is more difficult to supply in a post-war world. This task is medical in spirit and in practice, inalienable from the doctor in war as well as in peace. It is a task the responsibility for which is imposed on the physician by the very tragedy of human life. To this honorable responsibility he can only pay respectful obeisance. It need not be enhanced, it cannot be avoided.

GREGORY ZILBOORG, M.D.*

---

*Psychiatrist of New York City and author of *A History of Medical Psychology*. One of the founders and, since 1932, one of the editors of *Psychoanalytic Quarterly*.

HOW WE HAVE TREATED GRAVES' DISEASE DURING A QUARTER CENTURY*

J. H. MEANS, M.D.,
Boston, Massachusetts.

The good physician treats his patients by whatever method he thinks most likely to cure them. The wise physician, by observing the effect of the treatment which he gives in one case, tries to improve his treatment in the next. Without claiming to be either good or wise, I may say that in our treatment of Graves' disease in the Thyroid Clinic of the Massachusetts General Hospital, during the more than twenty-five years of its existence, we have always pursued this twofold objective. Thus we have from time to time changed our methods, and we look forward to continuing so to do in the future. Since the record of how we have actually treated our patients reflects our opinion on how we think they ought to be treated, I am going to use this record today as an index of the evolution of therapeutic theory in this field during the period mentioned.

When I was a medical student I was taught that iodine was absolutely contraindicated in thyrotoxicosis, this despite the fact that Trousseau[1] as early as 1863 had shown that it might be highly beneficial. The belief, widespread at the beginning of the present century that iodine is injurious in Graves' disease, sprang from the teaching of Theodore Kocher,[2] of Bern, who originated the term Iod Basedow, or iodine induced toxic goiter. In the notes which I took in 1910 on Dr. H. A. Christian's lectures on the Theory and Practice of Physic, I find the following:

"*Treatment.* Practically powerless to decrease secretion of gland except surgically. Keep in hospital under medical care for some time before operation. Cytolytic sera—also milk of thyroidectomized goats. Drugs—sedatives, bromide, rest in bed." No mention of iodine.

Austin Flint, writing in 1867,[3] before Kocher, and just after Trousseau, had this to say of treatment:

"The indications for treatment relate to the functional disorder of the heart together with the morbid state of the nervous system and the co-existing anaemia. Sedatives, remedies which tranquilize the action of the heart, without producing depression or interfering with the appetite and digestion, are indicated. For this end, hydrocyanic acid, aconite, belladonna, and digitalis may be employed. The anaemia calls for tonic remedies and especially ferruginous tonics. Trousseau is of the opinion that the latter are not useful, but most writers agree as regards their utility, and they have seemed to be beneficial in the few cases which I have observed. Iodine, with reference to the affection of the thyroid body, is of doubtful utility. Hygienic measures are probably of greater importance than remedies. Freedom from mental depression is to be secured as far as possible, and, whenever practicable, change of scene and other means of mental recreation are advisable. The diet should be nutritious, and outdoor life is desirable. Trousseau advocates the employment of cold water after the hydropathic method."

The item that intrigues me most in this statement is the mention of hydrocyanic acid, because recently we have observed the production of hypothyroidism by sulphocyanate in man.

During the quarter century after Flint, little if any progress was made either in the understanding of, or in the treatment of, Graves' disease. At least such would be my deduction from the following passage from the first edition of Osler's Textbook published in 1892:

"Medicinal measures are notoriously uncertain. The combination of digitalis and iron may be tried, and, when there is anaemia, often does good. . . . Ergot is warmly recommended by some writers. Belladonna gives relief occasionally, and should be administered until the dryness of the throat is obtained. No measures are so successful as rest in bed with an ice-bag or Leiter's tube applied occasionally over the heart, or, what is sometimes more agreeable, over the lower part of the neck and manubrium sterni. I have known the pulse to be reduced in this way from 140 to 90. Electricity has been much lauded and instances of cure have been reported. In many cases temporary improvement certainly follows the use of the galvanic current, the cathode being placed at the back of the neck and the anode along the course of the sympathetic or over the heart. Treatment of the thyroid gland itself is rarely successful, and the operative measures have

*From the Thyroid Clinic of the Massachusetts General Hospital.

Read at a meeting of the Richmond Academy of Medicine, Richmond, Va., April 14, 1942.

not been very satisfactory. Ligation of the arteries of the thyroid has been tried."

Another quarter century takes us to the time when our Thyroid Clinic was getting under way. In the 8th Edition of Osler, published in 1916, we find the following on treatment:

"(a) The disease is serious enough to warrant strong measures systematically carried out; much valuable time is lost in trying various remedies. The patient should be in bed, at absolute rest, and see very few persons. To quiet the heart's action the ice-bag may be continuously applied through the day, and veratrum viride, aconite, or strophanthin given in full doses. Ergot, belladonna, phosphate of soda, small doses of opium, and many other remedies are recommended, and in some instances I have seen benefit from the belladonna and the phosphate of soda. Electricity may be helpful."

"(b) *Serum Therapy.*—Two methods are employed: feeding with the milk of dethyroidized goats, introduced by Lanz, which is obtainable as a substance called rodagen. Good results have been reported by Mackenzie and others. Beebe, on the other hand, uses the serum of animals into which human thyroid extract has been injected. Excellent results have been obtained, but the method has the danger associated with the use of foreign sera."

"(c) *Surgical Treatment.*—Removal of part of the thyroid gland offers the best hope of permanent cure. It is remarkable with what rapidity all the symptoms may disappear after partial thyroidectomy. A second operation may be necessary in severe cases. The results obtained by the brothers Mayo and by Kocher give a remarkable percentage of recoveries. The operation under cocaine may be done with safety when the condition of the heart and the extreme tachycardia do not contraindicate it. Tying of the arteries and exothyropexia are recommended. Excision of the superior cervical ganglia of the sympathetic has one beneficial result, viz., the production of slight ptosis, which obviates the staring character of the exophthalmos."

"Marked benefit has followed the use of the X-rays in a few cases."

Such, then, was the general state of knowledge on the treatment of Graves' disease when I first became seriously interested in this malady. It was obviously one of some confusion. Whether the treatment given was medical or surgical depended largely on who got the case first—the physician or the surgeon. The physician took the attitude that the operative mortality was terrible, the surgeons that medical treatment was useless. There was some reason in each attitude. As a compromise, x-ray treatment was just emerging. I haven't been able to determine beyond doubt who was the first to use x-ray in the treatment of goiter. The paper of Beck,[4] 1900, in which some observations on cases of non-toxic goiter were reported, is the earliest I have found. In 1902, F. H. Williams,[5] of Boston, reported some amazing results in the treatment of exophthalmic goiter by x-ray. Pusey[6] also was among the pioneers in the irradiation treatment of toxic goiter. In 1905 several papers appeared, among others those of Stegmann[7] and of Görl.[8] The latter stated that the Röntgen ray has a definite action on the thyroid. In the same year Abbé[9] reported a case of exophthalmic goiter in which radium had apparently been of value. In 1907, C. H. Mayo[10] said, "We also make use of the roentgen ray. From its known action on the lymphatics and the glands it exerts a favorable effect on the over-activity of the thyroid in exophthalmic goiter, . . . while its effects may not be permanent, it is a valuable adjunct in preparing advanced cases for surgical procedure."

Seymour introduced x-ray treatment for Graves' disease at the Massachusetts General Hospital in 1915 and published a brief report in 1916.[11] He was rather enthusiastic, probably too enthusiastic, about the results, but none the less his comments are interesting. "Of the eighty cases," he states "eight were absolutely cured of their symptoms. Nearly all have gained weight. The average gain has been seven pounds, one case having gained twenty-five pounds. The pulse rate has been lowered in all but a few cases, the average being twelve beats. The greatest lowering in pulse rate was 52 beats, from 146 to 94. In this patient, the symptoms were very severe, with marked exophthalmos and tremor, and a moderately enlarged tumor of the gland. She had five treatments. The tremor has disappeared, the exophthalmos has practically gone, the circumference of the neck decreased one-half inch, and she feels perfectly well."

Surgery of the thyroid goes back to Billroth in the sixties, but it was really by Kocher in the eighties and in this country Halsted in the nineties that it was brought to a point of practical usefulness.

When I began my studies of thyroid diseases Dr. C. A. Porter, a leading surgeon of Boston in those

days, was the chief exponent of thyroid surgery. He had studied under Kocher. His contemporary, Dr. J. M. Jackson, on the other hand, was a vigorous proponent of medical treatment for Graves' disease. Dr. Jackson was a firm believer in a drug not mentioned by Osler, namely, the neutral hydrobromide of quinine, which had been introduced by Forchheimer,[12] of Cincinnati. According to Jackson and Mead[13] in 1908, under this drug there was striking imrovement, manifested by slowing of pulse, decrease in sweating and tremor, and diminution in the size of the goiter. On omitting the drug the symptoms promptly recurred. In conclusion these authors remarked:

"We cannot advocate sending early cases to the surgeon. The results of medical treatment are too favorable, from 70 per cent to 80 per cent of the cases being cured by it. . . . But notwithstanding the good results from medical treatment there will always remain a certain number of cases for the surgeon, viz., when the thyroid gland becomes so large that it produces symptoms of compression or when the patient becomes rapidly worse on medical treatment. Organic heart changes and bad general condition are surely contraindications to operation."

Two years later (1910) the surgeon, Porter,[14] after making the indisputable point that some patients are greatly benefited by operation, asked:

"How shall the physician decide which cases are to be treated medically and which subjected to operation? In this borderland disease," he continues, "close cooperation between the physician and surgeon is necessary to accomplish the best results. Medical treatment should always be tried first, its duration to depend upon the degree of improvement and upon the circumstances of the patient as regards ability to rest. In the poorer classes, operation, in spite of its dangers," (the operative mortality was from 3 per cent to 9 per cent in those days, or higher) "should be done earlier, as it offers hope of quicker improvement."

Dr. Jackson discussed this paper of Dr. Porter's in a very openminded way. Among other things he remarked: "I feel that the combined effort of surgical and medical men is nowhere so important as in these cases of exophthalmic goiter. It is not a medical disease nor a surgical disease, but a combined disease. I think the sooner we get together on it and work this out, the better statistics we shall have." It was in this spirit that we started our Thyroid Clinic, and so it has been ever since a joint medico-chirurgical enterprise.

The first important problem we set ourselves was to determine, accurately if possible, the relative merits of x-ray treatment to the thyroid and surgical removal. We followed the patients who were admitted first to the medical services on x-ray, and compared the results with those obtained on the surgical services, where rather prompt operation was the customary procedure.

From the beginning we made use of metabolic rate determinations as a yardstick of thyroid function, much as one would use the temperature in following a fever. Our first BMRs on adults at the Massachusetts General Hospital were made in 1913 with an old-style Benedict "Universal Respiration Apparatus". The chief points we have stressed about the use of the BMR in the study of patients with thyroid disease is that it should invariably be paralleled by careful clinical observation, and, when available, by other laboratory tests. The evaluation of clinical status should be based on no single fact, but should be carefully sublimated from all.

Our early studies of the x-ray treated cases convinced us that in many cases this is an effective form of treatment, and because it carried no mortality in contrast to a relatively high operative mortality in those days, we soon came to the conclusion that the best program for Graves' disease was a trial with x-ray, and operation only in those cases in which there was not satisfactory improvement. The results were that approximately a third of the cases seemed cured, another third benefited, and the remaining third not benefited. These latter came to operation.

In Fig. 1 I have shown how we have treated our cases from the year 1915 through 1940, inclusive, divided into periods of either four or five years. The cases shown for anyone of these periods will number about four or five hundred. The data is given in terms of the percentage receiving any of the several types of treatment, and, as said earlier, reflects our conviction of how, for any given date, the patients ought to be treated.

In the first period, it will be observed, 39.5 per cent of the patients received only x-ray treatment, while the remainder either had operations after x-ray had failed, or received surgical treatment with-

XUM

out any preliminary irradiation; 19 per cent of the former, 41.5 per cent of the latter.

In the second period our confidence in x-ray led us to treat 51 per cent by that form of treatment alone, while 15.5 per cent had operation after x-ray had failed, and 32 per cent had operation forthwith.

The year 1923 was a signal one. In that year it was that Henry S. Plummer[15] taught the profession that iodine was not only not harmful in Graves' disease, but that to fail to use it in every case would amount to gross negligence. Like Morton's discovery of ether, it wasn't the first discovery, but it was the one from which the world learned the truth. 1923, therefore, marks the beginning of a new era in the treatment of Graves' disease. It separates the pre-iodine from the iodine era.

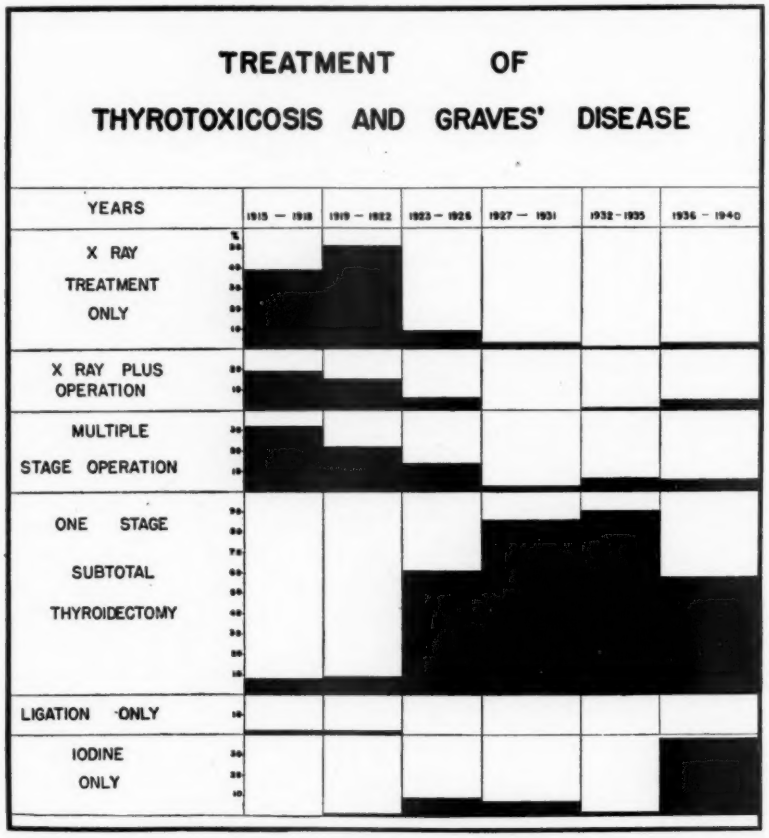


Fig. 1.

The effect of Plummer's discovery is plainly evident in Fig. 1. In the period immediately following there is a sharp decline in x-ray treated cases, and a sharp rise in one stage subtotal thyroidectomies (to 61 per cent). In the second iodine period subtotals ran to 86 per cent, and in the third to 90.5 per cent. Then they took a tumble, but to that I will come a little later.

It is of interest that the curve for multiple stage operation on the thyroid in toxic goiter has shown an almost progressive decline in our clinic. Starting off at 32 per cent in the first pre-iodine period, it dropped in the second to 22 per cent, and after iodine flattened out at not over 7 per cent. This is at variance with the practice in some well-known surgical clinics where multiple stage operations are still popular, but Dr. Samuel F. Haines, of the Mayo Clinic, who visited our Clinic recently, said it was very like the policy which has been followed in Rochester.

In the pre-iodine era Richardson and I[16] demonstrated that, whereas subtotal thyroidectomy usually

dropped the BMR, promptly and lastingly, to within normal levels, hemithyroidectomy dropped it only part way, after which in a year or so it might gradually fall to a normal level. In other words, subtotal removal did a better and prompter job, and was to be preferred unless too dangerous. It was because of the danger of one stage subtotals in those days that the multiple stage removal was sometimes employed.

When iodine came in we had two trains of thought: first, that it might be a definitive form of treatment of itself, or, second, failing that, it might be a splendid preparation for operation. Our early experience led us to believe (we have since changed our opinion to some degree) that it was not an adequate treatment *per se*, but that it did greatly reduce the risk of operation, largely by preventing postoperative toxic crises.

It is for these reasons that one stage subtotals bounded up in the first three iodine periods, and that x-ray approached the vanishing point. Our opinion of x-ray treatment had not declined, but because of the reduction in risk which iodine had brought about, subtotal thyroidectomy after complete iodinization became the method of choice, and was used in nearly every case. Pre-operative iodine was used, and still is used, in every thyrotoxic case of Graves' disease that came to operation.

From 1923, then, through 1935, we were strongly of the opinion that subtotal thyroidectomy in the thoroughly iodinized patient, was the method of choice in the treatment of all forms of Graves' disease or thyrotoxicosis. Since 1935, however, our views have become modified considerably. These modifications were in part the result of the acquisition of new facts, and in part of new interpretations of old ones.

For one thing the value of iodine alone as a definitive form of treatment was re-explored. Largely as the result of the observations and work of Hertz[17] it was found that, contrary to our belief of 1923, iodine alone *is* an adequate form of therapy in certain cases of Graves' disease. The problem is one of proper selection, and this Hertz discovered how to do. In our earlier trials with iodine alone we had selected cases largely on the basis of their apparent mildness, but when we had observed exacerbation of severe sort while a patient was still receiving iodine, we came to the conclusion that iodine alone was probably not adequate in any. Time proved that this was too sweeping a conclusion.

It is to be recalled that the natural course of Graves' disease is variable. In some cases the thyrotoxicosis subsides completely spontaneously. It may spontaneously give way to a phase of actual hypothyroidism. We have collected over a period of years data on the quantitative aspects of the iodine response in Graves' disease from all pre-iodine metabolic levels. From them we have devised certain average curves of what may be called standard metabolic response. Comparing individual responses with the standards, Hertz found that certain patients made what may be called a superstandard response. That is to say, their BMR fell more, during iodinization, than would be expected from the standard. Hertz further discovered that the patients who made such superstandard responses to iodine were those in which the disease was tending naturally to recede, to be approaching spontaneous recovery, and, furthermore, that such patients if kept continuously on iodine were unlikely to show any return of thyrotoxicosis, and that finally iodine could be stopped altogether without any ensuing relapse. Here, then, was a criterion for choosing patients for treatment by iodine alone, namely, superstandard iodine response. Patients who make such a response are approaching spontaneous recovery, and holding their symptoms in check with iodine until recovery occurs is all the treatment they need. This was the argument, and subsequent experience indicates that it has a high degree of validity. The rise in cases in which iodine alone was used, from 2 per cent to 38 per cent for the years 1936 through 1940, and the fall in subtotal thyroidectomy is then in large measure acccounted for.

Up to this point we had been thinking in terms of the thyroid and the effect of irradiation, ablation, or iodine administration upon its morbid performance. Since 1937, or possibly earlier, we have been gradually enlarging our conception of pathogenesis, and broadening our approach to therapeutics. The hormonic pattern extended to include the pituitary and its thyrotropic hormone. Other agents than iodine, which profoundly alter thyroid function immerged—thyrotropic hormone,[18] thyroid hormone[19] itself, cyanides and sulphocyanates,[20] and most recently, sulfonamides.[21, 22] At the same time other measuring sticks than BMR came to hand; blood iodine determinations, thyrotropic hormone estimations in blood and urine,[23] the effect of patient's

XUM

serum on animal thyroid and other tissues, tracer studies of the metabolism of iodine and other elements, by means of artificially radio-active isotopes.[24] Under these circumstances the whole problem of Graves' disease, its pathogenesis and treatment, was laid wide open, and the figures which are given in Table I for the year 1941 reflect some radical changes in our opinion of the management of this disease.

First, I may mention our separation of Graves' disease into two types, with certain striking differences in hormonic pattern, and we believe presenting some important differences in indications for treatment. I refer to what may be called the classic type, and what we have called the special ophthalmopathic type.[25] In the former, thyrotoxicosis and eye signs vary pretty much in parallel. In the latter, thyrotoxicosis is often slight, or even absent. The ophthalmopathy, on the other hand, is severe, and tends to become aggravated with a diminishing degree of thyroid activity. One may see progressive ophthalmopathy when the patient is frankly hypothyroid. The metabolism of patients falling in this category often drops to minus levels on iodine, and it is very seldom that these patients have a thyrotoxicosis sufficiently severe as to demand immediate relief *per se*. On the other hand, our experience indicates that thyroidectomy is contraindicated in these cases. It is not necessary for thyrotoxicosis, which, if present, can be easily controlled by iodine, and it may be followed by a marked aggravation of the ophthalmopathy. Precisely why thyroidectomy makes the eye condition in these patients worse is not known. It probably is dependent on various factors, of which lowered metabolic rate and consequent tendency to store water is one. Weakness and swelling of orbital muscles coincident with increased intraorbital pressure also undoubtedly are factors. An excessive secretion of thyrotropic hormone, which is a water-storing hormone, may be an important element. At least it can be said that in the special ophthalmopathic cases this hormone can be demonstrated in the urine, whereas this cannot be done in the classical variety.

In Table I, giving the data for the year 1941,* I have placed those cases classified as of the special ophthalmopathic type in a group by themselves, because we now consider that they present a separate, or special, therapeutic problem. Treatment is directed chiefly at the safeguarding of the eyes, and the major indication is to refrain from doing thyroidectomy. There were 10 cases in 1941 in which such a policy was followed.

Examination of the data for 1941 shows some other innovations. Thus there were 8 cases treated by radio-active iodine. This form of treatment was invented by Hertz in 1938. The theory back of it

TABLE I
TREATMENT OF THYROTOXICOSIS AND GRAVES' DISEASE DURING 1941

METHOD OF TREATMENT	NO. OF CASES
X-ray only	5
X-ray and operation	3
Multiple stage operation	2
One stage subtotal thyroidectomy	45
Iodine only	25
Radio iodine	8
Special ophthalmopathic	10

is that, since the thyroid selectively collects iodine by means of radio-active iodine, an irradiation effect can be planted directly in the cells that it is desired to irradiate, and might be expected to be more efficacious than x-ray given from outside. To date the results are at least encouraging.

Treatment by x-ray alone and x-ray plus operation showed no significant change in 1941 from previous years. Multiple stage operations fell to a new low of 2, and one-stage subtotal thyroidectomies fell from 58 in the preceding period to 45. Iodine alone remained about the same.

The narrative of our therapeutic policy is thus brought up to the date of writing (April, 1942). With regard to surgery, we have come full circle. In the period 1919-1922, the last before iodine, we treated approximately 50 per cent of cases by surgery, and 50 per cent by methods which did not include surgery. In the third period of the iodine era 98 per cent of the cases had thyroidectomies. Now in 1941 we are back to a 50-50 ratio for programs including operation and those without operation.

The reason for these changes in opinion is, of course, that the ideal treatment has not been found, and that we are still searching for it. Although in many cases of Graves' disease subtotal thyroidectomy gives remarkably good results, it is by no means perfect treatment. It is my own belief that ultimately there will be found a method of restoring

*Since there is a total of 98 cases in this table, the figures can be taken as per cent, and compared directly with earlier periods in Fig. 1.

hormonic balance to normal status which does not require resection of thyroid tissue. Nor do I believe the ultimate treatment will be by irradiation of any sort. It is more likely to make use of hormones, antihormones, or chemical agents which alter the activity of the thyroid gland, or of the sensitivity of the endorgans of its hormone. At least such is my prediction.

REFERENCES

1. Trousseau, A.: Lectures on Clinical Medicine. Translation by P. Victor Bazire, 1:542. London, 1867.
2. Kocher, T.: Ueber Jodbasedow. *Arch. f. klin. Chir.*, 92:1166, 1910.
3. Flint, Austin: A Treatise on the Principles and Practice of Medicine. 2nd edition, Philadelphia, H. C. Lea, 1867.
4. Beck, C.: Beitrag zur Diagnostik und Therapie der Struma. *Fortschr. a. d. Geb. d. Röntgenstrahlen*, 4:122, 1900.
5. Williams, F. H.: The Roentgen Rays in Medicine and Surgery. 2nd edition, New York, Macmillan Co., 1902.
6. Pusey, W. A., and Caldwell, E. W.: Practical Application of the Röentgen Rays in Therapeutics and Diagnosis. Philadelphia, W. B. Saunders and Co., 1903.
7. Stegmann, R.: Die Behandlung der Struma mit Röntgenstrahlen. *München med. Wchnschr.*, 52:1247, 1905.
8. Görl, L.: Ein neues Feld fur die Radiotherapie? (Strumenbehandlung). *München med. Wchnschr.*, 52:944, 1905.
9. Abbé, R.: Exophthalmic Goiter Reduced by Radium. *Arch. Roent. Ray*, 9:215, 1905.
10. Mayo, C. H.: Goiter with Preliminary Report of Three Hundred Operations on the Thyroid. *J.A.M.A.*, 48:273, 1907.
11. Seymour, M.: The Treatment of Graves' Disease by the Roentgen Ray. *Boston M. and S. J.*, 175: 568, 1916.
12. Forchheimer, F.: The Prophylaxis and Treatment of Internal Diseases. New York, D. Appleton and Co., 1906.
13. Jackson, J. M., and Mead, L. G.: Some Clinical Observations on the Diagnosis and Treatment of Exophthalmic Goiter. *Boston M. and S. J.*, 158:346, 1908.
14. Porter, C. A.: The Surgical Treatment of Exophthalmic Goiter. *Boston M. and S. J.*, 163:425, 1910.
15. Plummer, H. S.: Results of Administering Iodine to Patients Having Exophthalmic Goiter. *J.A.M.A.*, 80:1955, 1923.
16. Richardson, E. P., and Means, J. H.: Results of Surgery and of Surgery Combined with Roentgen-Ray Treatment of Exophthalmic Goiter. *Arch. Surg.*, 9:237, 1924.
17. Hertz, S., and Means, J. H.: A Prognostic Criterion in Selection of Cases of Expohthalmic Goiter for Nonsurgical Treatment. Tr. Am. A. Study Goiter, 1937, p. 140.
18. Galli-Mainini, C.: Effect of Thyroid and Thyrotropic Hormones upon Oxygen Consumption (QO_2) of the Thyroid of the Guinea Pig. *Endocrinology*, 29:674, 1941.
19. Galli-Mainini, C.: Effect of the Serum of Patients with Graves' Disease, Myxedema, and Acromegaly upon the Oxygen Consumption (QO_2) of Guinea Pig Thyroid. *Endocrinology*, 30:166, 1942.
20. Rawson, R. W., Hertz, S., and Means, J. H.: Cyanate Goiter in Man. Proc. Am. Soc. for Clin. Inv., 1942 (in press).
21. MacKenzie, J. B.. and C. G.: The Effect of "Sulfa" Drugs on the Thyroid Gland in Rats and Mice. Read at the 29th Annual Meeting of the Federation of American Societies for Experimental Biology, April 4, 1942.
22. Astwood, E. B.: Personal communication.
23. Rawson, R. W., Sterne, G. D., and Aub, J. C.: Physiological Reactions of the Thyroid Stimulating Hormone of the Pituitary—Its Inactivation by Exposure to Thyroid Tissue in Vitro and the Recovery of Activity by Exposure to Heat. Tr. Am. A. Study Goiter, 1941, p. 159.
24. Hertz, S., Roberts, A., Means, J. H., and Evans, R. D.: Radioactive Iodine As an Indicator in Thyroid Physiology. II. Iodine Collection in Normal and Hyperplastic Thyroids in Rabbits. Tr. Am. A. Study Goiter, 1939, p. 260.
25. Means, J. H., Hertz, S., and Williams, R. H.: Graves' Disease with Dissociation of Thyrotoxicosis and Ophthalmopathy. Tr. A. Am. Physicians, 56:67, 1941.

Massachusetts General Hospital.

XUM

REPORT OF AN EPIDEMIC OF AN ACUTE RESPIRATORY INFECTION WITH PNEUMONITIS*

ALEX. F. ROBERTSON, JR., M.D.,
Staunton, Virginia.

During the past six years there have been numerous reports of acute respiratory infections resembling in many ways influenza but presenting atypical areas of pulmonary consolidation, discovered largely by x-ray examination. These cases have occurred both sporadically and in epidemics.

The first report by Bowen[1] in 1935 included eighty-nine cases of "pneumonitis" which he considered a complication of influenza. There were few physical signs except rales and the diagnosis was made by x-ray appearance of spotty infiltration in the lungs. Other characteristics were cough, negative sputum, low leucocyte counts, and the mild nature of the disease.

In 1936 Allen[2] reported sixty-eight cases of acute pneumonitis, which he considered a virus disease, producing an atypical broncho-pneumonia. The symptoms were those of an acute respiratory infection without the ordinary ear-marks of pneumonia such as chill, sharp pain in the chest, rusty sputum, cyanosis, and leucocytosis. The disease was mild and the cases all recovered.

"The roentgen appearance is that of a confluent mottled fan or rounded area usually of homogenous, moderate density in the central portion, with the borders fading into the normal lung. It has the appearance of an exudative alveolar infiltration and is usually more localized and of more even density than the bronchopneumonias of childhood or than those which complicate adult diseases". The involvement was of one or both lower lobes in ninety-two per cent of the cases.

In 1938 Reimann[3] reported eight cases of an unusual and severe infection of the respiratory tract from which he was unable to recover the virus of influenza but which he believed to be caused by some other filtrable virus.

Outbreaks of mild epidemics have been reported from the University of Oregon, Oregon State College, Stanford University, Cornell, Harvard, Princeton, New York, the University of Minnesota, and other places.

Another report by Reimann and Havens,[4] in 1940, of four hundred and seven patients divides the cases into mild and moderately severe or severe forms. They thought the disease was due to an unknown virus infection and regarded the mild cases involving the upper respiratory tract as well as the severe cases with lung involvement, as differing only in degree of extension of the process.

The mild cases were mostly ambulatory with symptoms of "colds" and comprised seventy-five per cent of the series.

The severe cases had an insidious onset with headache, sore throat, coryza, malaise, muscular pains, cough, and shivering. Over seventy per cent had a persistent hacking cough with very little sputum. Common symptoms of pulmonary invasion were hoarseness, drenching sweats, weakness, slight cyanosis, and dyspnea. Fever lasted 2.5 days in patients without involvement of the lungs, 4.6 days in those with tracheobronchitis, and 8.2 days in those with pneumonia. In only four patients without pneumonia were rales or suppressed breathing heard in the interscapular areas.

Longcope[5] reported thirty-two cases, some of which showed the characteristics of the mild form commonly found, but some of which were moderately severe or severe. Two deaths occurred.

Finally, Weir and Horsfall[6] succeeded in isolating the specific virus from cases of pneumonitis similar to those previously described. After failing to find animals in this country susceptible to the suspected virus, they transferred their research activities to Jamaica where mongooses were found to be suitable. The importation of mongooses to the United States is banned. Pneumonia lesions were produced in from sixty-two to one hundred per cent of the test animals in carefully controlled experiments. Cross neutralization tests showed that this virus differed from the virus of influenza and other viruses known to cause respiratory diseases. The authors concluded that this virus was the specific cause of acute pneumonitis.

*Read before the Virginia Section of the American College of Physicians at Lynchburg, March 4, 1942, and also before the Medical Association of the Valley of Virginia at Harrisonburg, May 25, 1942.

During October and November 1941 an epidemic of an acute respiratory infection was observed in a private preparatory school. Seventy-nine cases occurred in a student body of four hundred and fifty or an incidence of seventeen and five-tenths per cent. Many of the cases gave a history of having had a "cold" for a few days before admission to the school hospital. The majority, however, had a rather sudden onset with headache, muscular pains, chilly sensations and occasionally a chill, dizziness, general malaise, and varying respiratory symptoms such as cough, sore throat, and blocking of the nose. Several patients were admitted with the symptoms of diarrhea and abdominal pain, and a few had nausea. Drowsiness was common during the febrile stage. Sweating occurred, but not so profusely as described by other observers.

In this series there were fifty-three which ran a relatively short course, with a moderate temperature elevation, which had an average duration of four days. These differed in no way from the cases of mild influenza commonly seen.

There were two cases of pneumonia, one atypical bronchopneumonia, and one type twenty-seven lobar pneumonia with physical signs and laboratory findings consistent with the diagnosis of the pneumonias commonly seen. These patients responded promptly to sulfadiazine therapy.

The chief interest in this report lies in the other twenty-four cases constituting thirty per cent of the series. In these the onset was similar to the mild cases except the temperature range was higher and often reached its height after from two to five days. The cough was frequently distressing and the patients appeared more toxic. The temperature subsided by lysis and lasted for an average of ten days. The average period of hospitalization was fifteen and five-tenth days.

Daily examinations of the chest were negative until the temperature had fallen to an average of ninety-nine and four-tenths. At this time small and medium moist rales might be heard, usually over one or the other lower lobes of the lungs. In three instances the rales might be heard over both lower lobes, and in one case an upper lobe and both lower lobes were involved. Other physical signs were essentially negative, save for slight impairment of resonance over the affected areas in a few cases, and the presence of severe coughing. The sputum was scanty, tenacious and very difficult to get up. It was never rusty or blood streaked. There was no pleural pain and no friction rubs were heard. No cyanosis or dyspnea was noted. As a rule, within a day or two following the appearance of the rales, the temperature was normal. The rales gradually cleared up in a period of about a week and were absent in follow-up examinations after the patients were discharged from the hospital.

Aside from a few cases of mild otitis media, tonsillitis and sinusitis, there were no complications and all of the cases recovered.

The striking feature was the absence of any signs of lung involvement during the toxic stage, and the appearance of rales just as the temperature was approaching normal and the patients no longer appeared ill.

Blood counts were made upon five of these cases. The highest leucocyte count was ten thousand six hundred and the average count was seven thousand two hundred. Negative tuberculin tests were obtained upon two of the earlier cases.

X-ray examinations were made upon six cases and showed areas of infiltration extending out from the hilus regions, which were considered consistent with a diagnosis of pneumonitis or virus pneumonia.

Facilities were not available for virus studies and it was not practical to make routine X-rays, blood counts, cultures and typing of sputum, but the pattern presented by those cases studied in more detail was reproduced with remarkably little variation in the other cases.

Several of the earlier cases were given sulfonamides without any effect upon the temperature or lung signs.

The degree of weakness and prostration was not marked considering the duration of the illness, and no more pronounced than that often seen after complicated influenza. However, the patients were young and healthy and their convalescence was no doubt shortened by these factors.

SUMMARY

1. A brief review of the literature of a recently isolated virus infection of the respiratory tract has been given.

2. An epidemic with a thirty per cent involvement of the lungs, resembling this virus infection has been described.

COMMENT

This report has been made to further emphasize the increasing incidence of epidemic pneumonitis

and to subscribe to the view advanced by others that this pneumonitis is not a complication, but the end-result seen in many cases of this disease, and represents the spread of a pneumotopic virus infection into the bronchioles and alveoli. In the milder cases this infection is limited to the upper respiratory tract.

Evidence points to this disease as being highly contagious. While most outbreaks have been mild in character, a few have been quite severe, and, as the disease spreads, it may increase in virulence. Strict isolation of these patients should be carried out.

The absence of physical signs of lung involvement during the febrile stage is of interest. It is suggested that the tenacious exudate is so scanty that it fails to fill the alveoli during the earlier stages and, therefore, physical signs are absent. As resolution sets in and the exudate is softened and partially detached from the alveoli, the moist rales which we associate with a resolving pneumonia make their appearance.

CONCLUSIONS

An acute respiratory infection with a high percentage of lung involvement has been considered as belonging to the class of infections due to a pneumotopic virus, recently described by Weir and Horsfall.

This conclusion has been based on the similarity of these cases to various epidemics described in the literature in the past few years, but cannot be substantiated in the absence of routine bacteriological study, X-ray examinations, and virus identification.

BIBLIOGRAPHY

1. Bowen, A.: Acute Influenza Pneumonitis, *Am. J. Roent. and Radium Ther.*, 1935, 34:168.
2. Allen, W. H.: Acute Pneumonitis, *Ann. Int. Med.*, 1936, 10:441.
3. Reimann, H. A.: An Acute Infection of the Respiratory Tract with Atypical Pneumonia, *J.A.M.A.*, 1938, 111:2377.
4. Reimann, H. A.: An Epidemic Disease of the Respiratory Tract, *Arch. Int. Med.*, 1940, 67:138.
5. Longcope, W. T.: Bronchopneumonia of Unknown Etiology (Variety X), *Bull. Johns Hop. Hosp.*, 1940, 67:286.
6. Weir, J. M., and Horsfall, F. L.: The Recovery from Patients with Acute Pneumonitis of a Virus Causing Pneumonitis in the Mongoose, *Jour. Exper. Med.*, 1940, 72:595.

THE HORMONAL TREATMENT OF PROSTATIC HYPERTROPHY AND CANCER: A REVIEW AND INITIAL CLINICAL EXPERIENCES*

LINWOOD D. KEYSER, M.D., F.A.C.S.
Roanoke, Virginia.

If one were called upon to characterize the present era of medicine in its developmental aspects, unhesitatingly it would be called the biochemical era. No field has developed more under this biochemical influence than that of endocrinology.

I wish to outline some newer phases of a somewhat ingenious approach to the problem of prostatism, both benign and malignant. This approach from the endocrinologic standpoint in its intriguing intricacies absorbs the thought of the urologic world at the present time.

During the past decade we have seen revolutionary changes in the treatment of prostatic hypertrophy by electro-surgical transurethral resection. Yet the same period has given birth to a newer physiologic concept which regards the prostate as a member of an intimately related endocrine system.

Clark has in a masterly review of the subject outlined in chronologic sequence the events leading to our present knowledge of the influence of endocrine hormones on the prostate. According to this author, from whose work we shall quote frequently in succeeding paragraphs, the endocrine treatment of prostatic hypertrophy began in 1893 when White castrated 111 men suffering from prostatic hypertrophy and obtained relief of symptoms in 87 per cent of the cases. Cabot later confirmed these observations, but castration for obvious reasons became unpopular and was discarded.

Hoskins in 1911 developed the concept that the gonadotropic activity of the pituitary, then vaguely understood, was normally held in check by the

*Presidential address delivered before the Virginia Urological Society meeting at the University of Virginia, March 5, 1942.

gonads. Smith and Engle next showed that hypophysectomy caused atrophy of the prostate. Later, in 1934, Walsh, Cuyler and McCullagh found that such post-hypophysectomy prostatic atrophy could be prevented by the parenteral administration of male sex hormone.

We may note in passing that androsterone was identified as the male sex hormone by Butenandt in 1931. Rusicka synthesized androsterone in 1933. Returning to the pituitary, it was found that the anterior-pituitary-like principle of pregnancy urine would produce prostatic hypertrophy in castrated male rats, if injected parenterally. Lower, Johnson, Zondek and others confirmed this activity of anterior-pituitary-like hormones by injecting it into monkeys with consequent prostatic enlargement.

With the isolation of androsterone and the finding that diminution of virility, of sex vigor and the occurrence of prostatic hypertrophy in later life appeared concomitantly with a diminution of androsterone as determined by biologic and biochemical assays, it was assumed that all of these phenomena were due to the decrease of the male sex hormone in the senescent period.

Now, Lower, McCullagh and their associates at the Cleveland Clinic from experimental evidence developed the hypothesis that there are two major testicular hormones. One, called inhibin, is developed by the tubules or germinal cells. It has the function of inhibiting or controlling the gonadotropic activity of the pituitary gland. It is this hormone, "inhibin", which prevents the pituitary from overstimulation of the interstitial cells of the prostate.

A second testicular hormone, androitin, is produced by the interstitial cells of the prostate. It is closely related to, if not identical with, androsterone, and acts as a sex stimulant and tends to produce prostatic hypertrophy. In short, the pituitary can stimulate the testis to produce sufficient androitin to cause prostatic hypertrophy, unless there is sufficient inhibin present to hold the pituitary in check.

Notwithstanding this physiologic evidence to the contrary, the use of androsterone in the clinical treatment of prostatic hypertrophy was tried largely on an empirical basis, or even, judging from what has just been said, on an irrational basis. Indeed, this form of therapy became widespread and an abundant amount of literature reporting remarkable clinical successes was published. It was claimed that the patients improved subjectively and that prostatism was to some extent relieved. However, no carefully controlled cases have been established showing atrophy of the prostate. Its size and histologic features remained the same. Nevertheless, even at the present day, male sex hormone is advocated and is being widely used in prostatic hypertrophy, lack of libido and in the sex neuroses of the so-called "male climateric". Indeed, if one were to believe some of the articles in scientific and lay literature, and especially those presented in brochures put in our hands by manufacturers, the fountain of youth lies just ahead. Yet scientifically controlled series of cases in the hands of conservative observers sharply controvert this action of the male sex hormone and even go to show that its indiscriminate use may actually cause progression of the disease it is supposed to cure.

Kearns notes that testosterone has a salutary effect on muscle tone and creatinine balance. He feels that it is possible that the changes proven in increasing the power of skeletal muscle may well be duplicated in the bladder detrusor musculature. This may explain the improved emptying power which patients with prostatism often experience after taking testosterone.

To return to our physiologic contributions, Zuckermann showed that male and estrogenic hormone are both elaborated in the male organism. He felt that they are balanced in such a ratio that the estrogenic powers of the female sex hormone are ordinarily inhibited. As senescence approaches this balance becomes disturbed and one hormone may be produced in excess of the other.

Wugmeister, in 1937, promulgated a similar thesis that the female hormone, always present in both male and female, diminishes in later life, leaving a relative excess of male hormone. The organism in both male and female tends towards "hypervirilixation". The anterior pituitary being no longer inhibited by estrin begins an over-stimulation of the testis to produce a relative excess of androsterone, and this stimulates the genital glandular apparatus to hypertrophy. In 16 of 23 cases of prostatic hypertrophy treated with estrin, improvement was noted in 9 of these. The hypertrophy was clearly reduced as evidenced by rectal and cystoscopic examination.

Huggins and his colleagues at the University of Chicago believe the action of estrin on the male genital complex to be:

XUM

1. Inhibition of the gonadotropic activity of the pituitary.

2. Depression or neutralization of the male hormone.

3. Depression of the germinal epithelium and interstitial cells of the testis.

4. Over-dosage produces desquamation of the prostatic epithelium.

5. Over-dosage produces carcinoma of the breast in male mice.

By male hormone administration these workers produced hypertrophy of the dog's prostate and subsequent reduction in the size of this prostatic hypertrophy by administering theelin or stilbestrol.

Again, with Stevens and Hodges, Huggins has investigated the effect of castration on prostatic cancer and hypertrophy. In 3 cases of benign hypertrophy subjected to castration, definite epithelial atrophy together with gross decrease in the size of the gland was revealed clinically and by biopsy specimens. They feel that while in old age male hormone is decreased in amount, enough remains to produce prostatic hypertrophy. However, if this residuum of hormone is eliminated by castration, the prostate will atrophy. Also by the injection of estrin without castration, the remaining male hormone is neutralized and atrophy similar to that produced by castration takes place.

In the clinical management of benign prostatic hypertrophy, Kahle and Maltry treating 14 patients with diethylstilbestrol found that symptoms were alleviated in 7 and in all but 3, who died of intercurrent disease, the prostate decreased in size, as noted by rectal and cystoscopic examination. Clark reports 7 patients treated with diethylstilbestrol with relief in 6 patients.

In dealing with advanced prostatic cancer, Huggins found castration to have a reasonable ameliorative effect. In this disease it was found that the serum phosphatase, which has a maximum activity at pH 5 (acid serum phosphatase), is increased especially in the presence of bony metastasis. Acid serum phosphatase is also increased in benign prostatic hypertrophy. Also, acid phosphatase was found increased in the cells of the primary prostatic lesion. Now after castration, the acid serum phosphatase was found to undergo a sharp and prompt reduction toward normal. The alkaline phosphatase (pH 9) at first rose and then returned to normal.

Clinically orchidectomy in patients with prostatic cancer is accompanied by gain in weight, disappearance of pain, rise in red cell count, increase in size of stream, and reduction of residual urine. Against these features are noted in some cases a pitting edema and swelling of the lower extremities, diminution or obliteration of sexual capacity and the appearance of hot flashes, the latter being relieved to some extent by stilbestrol. The results from the administration of estradiol dipropionate (diovocylin) or diethylstilbestrol are reported as similar to those obtained by castration, but are generally held to be not so marked.

Huggins reports that osteolysis from metastatic lesions was shown to undergo reparative changes after castration, with sclerosis and recalcification being noted in x-ray studies. Injection of androsterone in cases with prostatic cancer seemed to cause increase in pain. Huggins reported clinical improvement in 15 of 21 cases of prostatic cancer treated by castration. Herrold and Palmer reported improvements in 10 patients treated with estradiol dipropionate, while Herbst in 9 cases treated with this hormone found marked general improvement with reduction in nocturia, increased size of stream, relief of pain, and increase in appetite, strength, betterment of hematologic findings, and general retardation of the progress of the disease.

Munger has advocated castration by irradiation and reports results comparable with those obtained by castration and hormone therapy. Most observers at the present time, however, feel that surgical castration more completely removes the residuum of male hormone than does castration by irradiation.

CASE REPORTS

My own experience with hormonal treatment of prostatic disease is recent and brief. It is now nine months since I began using this form of treatment in selected cases. At the outset we chose cases which were regarded as borderline with regard to the indication for prostatectomy, or those with certain complications which made prostatectomy by incisional operation, or by resection, highly hazardous.

Twenty-one patients with prostatic disease have been treated. Thirteen of these were patients with clinically benign hypertrophy, varying in symptoms from increased frequency, diminished stream and little residual, to six patients who had more or less

complete retention, and required frequent catheterization.

One patient, aged 61 years, with advanced carcinoma of the prostate and eight with prostatic inflammation have been treated with hormones, the latter receiving in addition massage and usual local measures.

Of the thirteen patients, aged 54 to 85 years, with benign hypertrophy, six had complete or almost complete retention. By use of an indwelling catheter and the daily administration of diethylstilbestrol,* 1 mg. by mouth and 1 mg. intramuscularly, two were able to empty their bladders freely, with little residual, with increased stream, and lessened nocturia in a period of two weeks. After three or more months with occasional courses of the drug by mouth, they are maintaining good vesical function. Four patients were regarded as poor surgical risks: one because of a fractured femur; another because of a fractured zygoma and cerebral arteriosclerosis; another because of paralysis agitans and extreme senility; and another, age 85 years, because of progressive myocardial failure. Each of these was subjected to suprapubic cystostomy for drainage, using an endoscopic technique which I described several years ago.

The first patient, a man of 72 years of age with a fractured femur, had his suprapubic drainage while being treated for his fracture. About two months later we began diethylstilbestrol by mouth and intramuscularly. A few weeks later he reported that he was voiding naturally and, upon removing his suprapubic catheter, the wound healed within a few days and has remained healed for six months. He has no residual at present, nocturia once to twice. He passes a good stream and symptoms of prostatism present for several years are almost entirely relieved.

The second patient, a man of 67 years, with a fractured zygoma, myocardial disease and cerebral symptoms associated with hypertension and arteriosclerosis, had diethylstilbestrol therapy started a few days after suprapubic cystostomy. After a period of five weeks he began voiding, discarded his suprapubic tube, and his wound healed. He is still troubled with nocturia, but makes a good stream and his residual urine is usually under 100 cc. His blood urea originally was 65 mg. per cent and is now about 35 mg. per cent. He has had no sharp return of his obstruction after 4 months.

The third patient, aged 85 years, with progressive myocardial failure, did not respond to indwelling catheter and stilbestrol treatment. A few days following cystostomy, he died of a cardiac death.

The fourth patient, a man of 77 years, with Parkinson's disease and almost total retention, was a city almshouse patient who had been in the hospital several times during the past year with treatment by indwelling catheter. He likewise failed to respond to stilbestrol and estradiol dipropionate treatment over a period of weeks. So a suprapubic cystostomy was done and the therapy continued. After several weeks of estrogenic therapy, he began to void small amounts. We were about to submit him to resection, but decided first to give testosterone treatment a trial. Ten to twenty-five mg. of Oreton (Schering)* were administered daily intramuscularly. Within a week he was voiding and we discarded the suprapubic tube. The wound healed immediately. His stream is fair, has no residual and voids two to three times nightly. We give him 1 mg. stilbestrol every two days and occasional doses of Oreton. I have no explanation for the role which testosterone may have had in this case, but report the fact.

Of the seven cases of benign hypertrophy with residual from zero to three or four ounces, but with nocturia and diminished stream, we will speak briefly. Six of them have received marked benefit and are emptying their bladders completely, with better stream and with nocturia less frequent. In addition to stilbestrol therapy, these patients have received massage, and in a few instances diathermy and sounds have been used. None of them at present are regarded as candidates for resection in the immediate future.

One case of prostatic cancer in a man of 61 years with a stony hard fixed mass obliterating the prostatic contour and extending to the region of the seminal vesicles was complicated by pleurisy and asthma. A catheter could be passed with the greatest difficulty and a residual of ten to twenty ounces existed. No metastasis to bone could be determined. He was given a therapeutic castration dose

*The diethylstilbestrol was provided by the Department of Medical Research, Winthrop Chemical Company, Inc. The testosterone (Oreton) was furnished by the Department of Medical Research, Schering Corporation. The estradiol dipropionate (Diovocylin) was furnished by the Department of Medical Research, Ciba Pharmaceutical Company.

XUM

of x-ray by Dr. C. D. Smith and concomitantly diethylstilbestrol was given. Within one month, in spite of severe attacks of asthma and pleurisy, he began to improve in general strength, his stream increased, the prostatic mass, as felt by rectum, began to soften, and his residual urine disappeared. After four months his urinary function is maintained and as yet the expected progress of his disease is being held in check.

In eight cases of non-specific prostatitis associated with pus and bacteria (usually green producing streptococci) in the expressed secretion, we have administered stilbestrol, in addition to massage, sounds, irrigations and heat. One milligram of stilbestrol has been given by injection once to twice weekly.

Some of these patients have had sharp improvement and have been relieved of dysuria, backache, and general lassitude, which in three instances at least had troubled them for several years. I cannot evaluate at this time the effect of hormone therapy in this type of patient, but I have the strong impression that it has been of some benefit and that it should be further investigated. The infection for the most part has been reduced to a small residuum, as determined by microscopic study and cultures of the prostatic secretion, but to be sure a residuum of infection does remain.

In commenting upon the general features of these somewhat too brief case reports, may I say that we have not done biopsies on any of these patients. This procedure, while of utmost scientific value, involves repetition perhaps several times and entails some hazard in the type of patient to whom hormone therapy has been applied. Steroid studies in blood and urine are most intricate, unstandardized at present and require biochemical techniques, which I have not had at my disposal. Likewise, while phosphatase determination in Bodansky units has been done, these were not carried out in their relation to the pH range, as advocated by Huggins, who uses the method of King and Armstrong. Thus our findings in this respect are not conclusive and give us no clinical information of value.

It is to be emphasized that there are certain hazards in the use of stilbestrol. In brief, they are nausea, dizziness, edema of the lower extremities, and an erythematous skin rash, possibly leading at times to exfoliative dermatitis. Loss of libido and oligospermia are the results of large doses, or prolonged administration of stilbestrol and estradiol dipropionate, and contraindicate the use of these drugs to any great extent in younger or vigorous mature men. For this reason, the administration of these drugs in prostatitis, especially in younger men, must be in small dosage and at infrequent periods, with careful watch of the sperm content of the seminal secretion. Painful swollen breasts frequently occur in patients receiving these hormones, and this is an almost constant finding, if the drug is continued in large dosage over a long period of time. In fact, Herbst and others regard this as indicating the therapeutic limit of the drugs, its discontinuance being advised when this feature becomes well developed. While no cases are on record of carcinoma in the breast or other organs having developed from prolonged use of sex hormones, from animal experiments the possibility of such a development must be admitted.

Most of our patients developed some of these symptoms. Nausea was frequent and dizziness occasional. Several complained of loss of libido and gynecomastia was noted at sometime as the general rule. This disappeared slowly after stopping the drug.

The dosage employed varies with different authors. Herbst advised 1 mg. three times weekly. Herrold gives daily dosage of as large as 5 mg. daily at the outset. Some prefer diovocylin (estradiol dipropionate) and find that it has a more positive effect than stilbestrol.

The use of testosterone, alternating with stilbestrol, has been mentioned as of possible value in one case. I find no reference to this in the literature, but there are hypothetical reasons why it might be of value in attempting polyhormonal treatment of an endocrine imbalance.

In conclusion, I have presented a review and a few experiences with a newer effort in treating prostatic disease. The evaluation of this effort must rest with further clinical experience and the application of biochemical factors yet to be determined and yet to be more clearly standardized. Surgery at present is still the method of choice for treating prostatic hypertrophy. Yet in borderline cases, with due care to toxicity of the drugs and their possible effect on the libido, I feel that a trial of hormone therapy may be justified. Likewise, in certain urologic derelicts with such concomitant disease as to make resection or prostatectomy hazardous, the hormone therapy may be tried with or without suprapubic cystostomy. If the patient's re-

XUM

sponse to such therapy is not immediately and reasonably favorable, surgery is indicated.

In dealing with non-operable prostatic cancer, reports from every urologist using this treatment have been more than encouraging and show that such a regimen will more often than not stay the progress of this disease to an extent at present indeterminate.

In short, we are seeing the basis for future development of hormone therapy being established. If and when the present conflicting concepts of endocrine physiology as applied to the prostate become more clearly crystallized, we may look forward to a method which promises a great deal in prophylaxis and therapy in managing certain more clearly defined types of vesical neck obstruction in later life.

Since writing this article a further patient, age 84 years, with total retention due to benign prostatic hypertrophy has been treated by suprapubic cystostomy followed by daily doses of 1 mg. stilbestrol and 12½ mg. testosterone three times weekly. After three weeks his suprapubic tube was discarded, his wound closed, and he is now after several weeks voiding freely with no residual. The combination of estrogenic and androgenic therapy needs further investigation.

BIBLIOGRAPHY

Belt, Elmer: The Endocrinology of Prostatic Hypertrophy. *Southwestern Medicine,* November, 1938, pp. 434-438.

Clark, Anson L.: The Medical Treatment of Prostatic Hyperplasia. Urol. Correspondence Club Letter, April 14, 1941, 27-31.

de Vries, John K.: The Differential Diagnosis of Carcinoma of the Prostate and Skeletal Metastases and Osteitis Deformans. *Jr. Urol.,* November, 1941, 46, 2, pp. 981.

Draper, J. W.; Slaughter, Geo.; and Denslow, C.: The Effect of Testosterone Propionate on Benign Prostatic Hypertrophy. *Jr. Urol.,* 1941, 45, 4, pp. 539-548.

Duigemanse, E., and Laquer, E.: The Content of Male and Female Hormone in the Urine of Patients with Prostatic Hypertrophy. *Jr. Urol.,* 44: 530-540, October, 1940.

Heckel, N. J., and Steinmetz, Charles, R.: The Effect of Testosterone Propionate Upon the Seminal Fluid in Man. *Jr. Urol.,* 1941, 45, 1, 118-124.

Heckel, N. J., and Steinmetz, Charles R.: The Effect of Female Sex Hormone on the Function of the Human Testis. *Jr. Urol.,* August, 1941, 46, No. 2, p. 319.

Heckel, N. J.: The Influence of Testosterone Propionate Upon Benign Prostatic Hypertrophy and Spermatogenesis: A Clinical and Pathological Study in the Human. Trans. Am. Assn. G. U. Surgeons, 32, 237-261, 1939, *Jr. Urol.,* 43, 286-308, February, 1940.

Herbst, W. P.: Benign Hyperplasia and Carcinoma of the Prostate. Urol. Correspondence Club Letter, August 4, 1941, 41-42.

Idem.: Observations on the Effect of Estradiol Dipropionate and Diethylstilbestrol on Malignant Prostatic Tissue. (In press.)

Herrold, R. D.: Stilbestrol for Carcinoma and Hypertrophy of the Prostate. Urol. Correspondence Club Letter, August 11, 1941, 39-40.

Herger, C. C., and Sauer, H. R.: Relationship of Serum Acid Phosphatase Determination to Presence of Bone Metatases for Carcinoma of the Prostate. *Jr. Urol.,* August, 1941, 46, 2, p. 286.

Huggins, C., and Hodges, C. V.: Studies in Prostatic Cancer I: The Effect of Castration, of Estrogen and of Androgen Injection on Serum Phosphatases in Metastatic Cancer of the Prostate. *Cancer Research,* I, 293, April, 1941.

Huggins, Charles; Stevens, R. E., Jr.; and Hodges, C. V.: Studies in Prostatic Cancer II: The Effect of Castration on Advanced Carcinoma of the Prostate Gland. *Arch. Surg.,* 1941, 43, 2, pp. 209-224.

Huggins, C.; Scott, W. W.; and Hodges, C. V.: Studies in Prostatic Cancer III. *Jr. Urol.,* November, 1941, 46, 2, p. 997.

Huggins, C., and Stevens, R. A.: The Effect of Castration on Benign Prostatic Hypertrophy in Man. *Jr. Urol.,* 43, 705-714, May, 1940.

Kearns, W. M.: Testosterone in the Treatment of Testicular Deficiency and Prostatic Enlargement. *Wisconcin Med. Jr.,* September, 1941.

Idem.: The Clinical Application of Testosterone. *Jr. A.M.A.,* June, 1939, Vol. 112, pp. 2255-2258.

Keyser, L. D.: Suprapubic Cystostomy by an Endoscopic Technique. *Jr. Urol.,* Vol. 41, No. 2, February, 1939.

Kircheskey, Boris; Benjamin, John; Belt, Elmer; and Schwartz, Monte: Endocrinologic Studies in the Prostatic Gland of the Male Rabbit. *Jr. Urol.,* August, 1941, 46, 2 pp. 303.

Merck, K.: Uber die Verwendung Synthetischen Testishormons in der Konservativen und der Chirurgischen Therapie der Prostata Hypertrophie. *Zts. F. Urologie,* 33:573-577, 1939.

Moore, C. R.: The Influence of Hormones on the Development of the Reproductive System. *Jr. Urol.,* 1941, 45, 6: pp. 869-875 (July).

Moore, R. A.; Miller, Mary L.; and McLellan, A.: The Clinical Composition of Prostatic Secretion in Relation to Benign Hypertrophy of the Prostate. *Jr. Urol.,* July, 1941, 45, 6, pp. 132.

Munger, A. D.: Experience in the Treatment of Carcinoma of the Prostate with Irradiation of the Testicles. *Jr. Urol.,* November, 1941, 46, No. 2, p. 1007.

XUM

Selye, Hans: Effect of Hypophysectomy on Morphologic Appearance of Kidney and Renotropic Action of Steroid Hormones. *Jr. Urol.*, 45, 6, pp. 110.

Tollins, S., and Moore, R. A.: The Metabolism of Surviving Prostatic Tissue in Relationship to Benign Hypertrophy of the Prostate. *Jr. Urol.*, July, 1941, 46, 1, p. 138.

Suite 909-11 Medical Arts Building.

BENIGN BRONCHIAL ADENOMA: REPORT OF A PERIPHERAL LESION OF THE RIGHT MIDDLE LOBE, CURED BY PARTIAL LOBECTOMY*

LEMUEL E. MAYO, JR., M.D.,
Portsmouth, Virginia.

Benign bronchial adenomas fall into that class of tumors that present histological difficulties in establishing their benignity; that is to say, they frequently are "microscopically malignant" but in most instances are clinically benign. It is just such a growth that I would like to report.

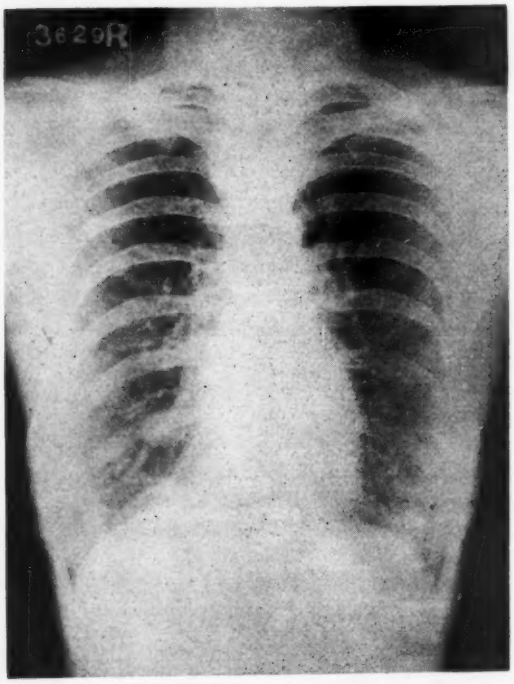


Fig. 1.—Anterior-posterior film of chest taken in 1937. Tumor located in lower portion of right chest.

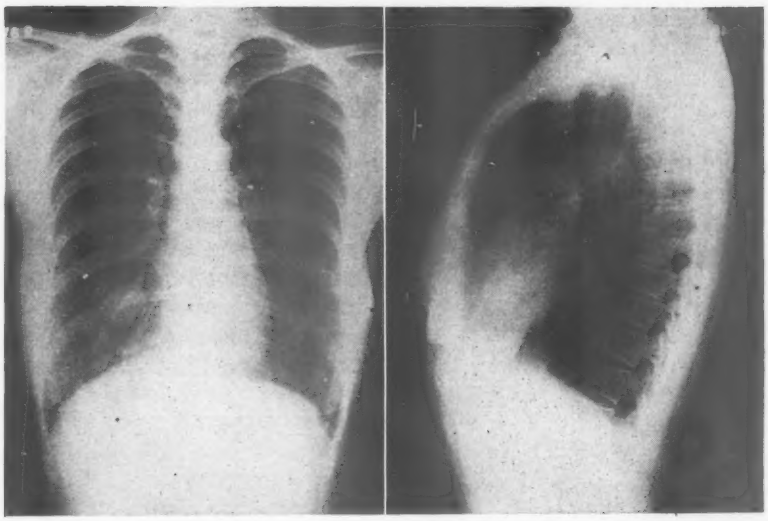
Adenomas of the tracheo-bronchial tree, according to Wessler and Rabin,[1] who in 1932 reported a series of 17 cases, are usually in the form of pedunculated polyps and always originate from the mucous membrane of the trachea, right or left main stem bronchus, or one of the adjacent larger secondary bronchi. They further state that the growth is usually situated near the origin of the involved bronchus. This is also the opinion of Kramer and Som[2], Hamperl[3], Jackson,[4] and numerous other authors. In reviewing the writings of these and others, no report or reference to a growth arising in the peripheral or terminal bronchi could be found. On this basis, if for no other reason, this case merits consideration. The tumor unquestionably had its origin in a terminal bronchus and was situated immediately beneath the pleura of the right middle lobe.

A brief review of these tumors reveals them to present quite definite symptoms, both subjectively and objectively, occasionally even to the point of enabling one to make a diagnosis prior to bronchoscopic visualization. They occur as a rule in the third and fourth decades, over two-thirds of the reported cases falling in this age group. They have been reported, however, in patients as young as 13 years and as old as 64 years. Their point of origin has been the subject of much dispute, but the consensus of opinion at present is that they arise from the duct epithelium of the bronchial glands and are usually covered with a highly vascular bronchial mucosa. More fuel for the debated origin of these tumors can be added if it is assumed the tumor in question originated in a terminal bronchus or bronchiole, since Jordan[5] states that bronchi with diameters of 1 mm. and less do not possess mucous glands.

Bronchoscopically, a smooth, round or oval tumor, which is usually pedunculated and freely movable, but which may on occasion be sessile, is seen.

The clinical syndrome presented by these

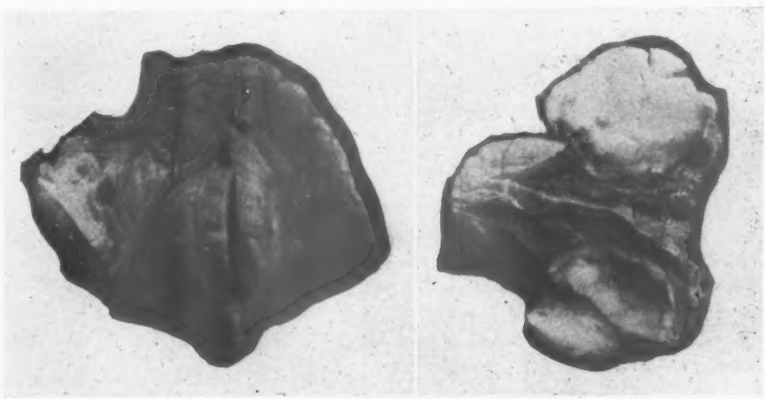
*Read before the Seaboard Medical Society of Virginia and North Carolina at its meeting in Washington, N. C., December, 1940.



Figs. II & III.—Anterior-posterior and lateral films taken in 1939, showing the increase in size of the tumor.

adenomas are essentially those of any benign bronchial neoplasm. When the tumor is small or in the so-called non-obstructive phase, symptoms may be entirely absent, or the one cardinal symptom of hemoptysis may be present. Because of the location of the growth in the main bronchi the bleeding is characteristic in that it begins abruptly and terminates just as abruptly—with no prolonged periods of blood streaked sputum. Chest x-rays at this time will reveal neither the tumor nor evidence of parenchymal damage, and under these conditions, i. e., unexplained hemoptysis, and a negative chest film, bronchoscopy is definitely indicated, for it is by this means only that bronchial tumors can be diagnosed with any degree of certainty. Additional symptoms during this non-obstructive phase are caused by the tumor *per se*, and consist for the most part of an irritative cough and a respiratory wheeze. Bronchoscopic removal of the tumor at this time usually results in a complete cure.

With the continued growth of the tumor the obstructive phase is reached with its super-imposed atelectasis, recurrent bouts of pneumonia, pleurisy, and in time the inevitable termination of all bronchial tumors, suppurative bronchiectasis with chronic indurative pneumonitis. Relief of the obstruction



Figs. IV & V.—Gross specimen: showing mediastinal surface of the distal portion of the middle lobe and the contained tumor.

XUM

through bronchoscopic removal of the tumor, thus promoting drainage, will markedly improve the symptoms provided the damage to the distally obstructed lung has not progressed to the point of permanent damage to the pulmonary parenchyma. Complete relief from the resulting bronchiectatic sputum will usually necessitate the removal of the diseased lobe or lobes of the involved lung.

Fig. VI.—Photo-micrograph, low power: Showing circumscribed nature of the tumor with compression of adjacent lung tissue.

CASE REPORT

Mrs. J.B.H.; age 36; date 10/4/39.

Complaint: Pain in chest, general malaise and occasional hemoptysis.

History: The patient's present illness began during the winter of 1937. At this time she began to have blood streaked sputum, pain in her right chest and general malaise. An x-ray of her chest at this time revealed a localized, well circumscribed shadow in the right lower chest, the lesion measuring 1.5 cms. in diameter. The remainder of the lung fields were normal. No definite diagnosis was made at this time. Under conservative symptomatic treatment she improved somewhat, but was more or less confined to her home. Interval x-rays revealed the growth to be slowly increasing in size. In May, 1939, the patient had a moderately severe hemoptysis, with an increase in her chest pain. From this time until she was seen by me in October she had been a semi-invalid because of her general ill-feeling. When first seen, in addition to her original symptoms, the chest pain had increased and, in addition, she complained of substernal oppression and an annoying choking sensation. Except for the above subjective symptoms her general health was apparently good. There had been no blood streaking since the previous hemorrhage in May, and cough had never been present.

Past History: In 1933 a pelvic laparotomy had been done, the details of which were not available. In 1935 a D & C and sterilization with x-ray and radium had been done for excessive uterine bleeding. The pathological diagnosis at this time was "benign endometrial hyperplasis." She has not menstruated since.

Examination: A well developed and nourished white woman, not apparently ill. Weight 117 lbs.

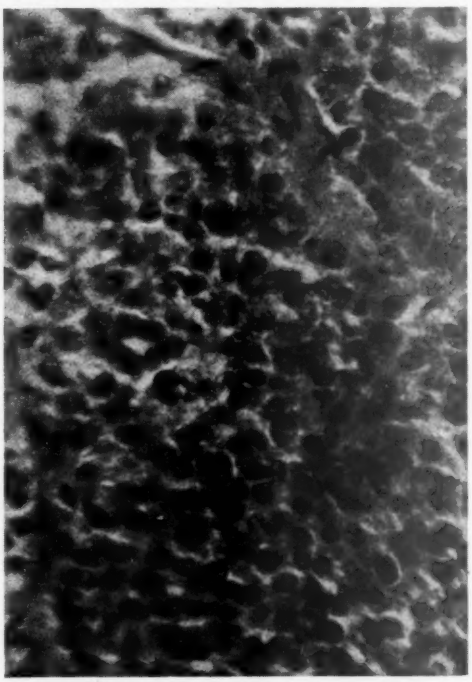


Fig. VII.—Photo-micrograph: high power: Showing the orderly arrangement of cells, with interlacing connective tissue strands.

Examination of chest was entirely negative to percussion and auscultation. There was point tenderness over the fifth rib anteriorly in the mid-clavicular line, corresponding almost exactly with the location of the underlying tumor. Abdominal examination revealed deep tenderness in both lower quadrants, a remote mid-line scar, and a remote right rectus scar. Pelvic examination was negative excepting for a minimal amount of cervicitis. X-ray examination of the chest at this time revealed the lesion to have increased in size to 3.5 cms. in diameter. Lateral views indicated that it was located

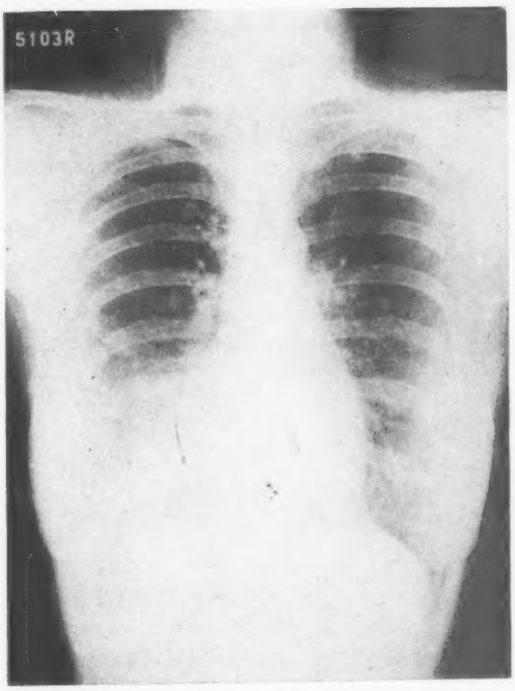


Fig. VIII.—Anterior-posterior film of chest. Three months post-operative.

in the middle lobe. Bronchograms were done but were of no diagnostic significance. Bronchoscopy revealed the tracheo-bronchial tree to be entirely normal. A diagnosis of benign tumor of the lung was made and exploratory thoracotomy recommended.

Operation: On November 4, 1939, under gas, oxygen, ether anesthesia, the chest was opened through the fifth interspace, anteriorly. The tumor was easily located on the medial and inferior surface of the middle lobe, situated immediately beneath the visceral pleura, and adherent to the pericardium by a short fibrous adhesion band. This was cut, and closer examination of the tumor revealed it to be definitely circumscribed and with no visible evidence of invasion or compression of the surrounding pulmonary tissue. The distal third of the middle lobe, containing the tumor, was then amputated, and the stump ligated with mattress sutures. The ribs were approximated with pericostal sutures, and the soft tissues closed in layers. The lung was re-expanded by positive pressure, a soft catheter, previously inserted serving as an outlet for the retained pleural air.

Histological Examination: The initial report on the specimen, obtained from a rapid section, was that of oat cell, or small cell carcinoma. In view of the obvious discrepance between these microscopical findings and the clinical history, an exhaustive histological investigation was done. The final report reads: "Grossly the lesion consists of a circumscribed and sharply outlined round tumor mass, measuring 3.5 cms. in diameter. It is composed of homogenous, firm grayish-white, opaque tissue. There is compression of the surrounding lung but no invasion.

"Microscopic sections of the tumor reveal a benign adenoma. Several cell types are present, including cuboidal, polygonal and cylindrical, as well as columnar types. The cells are gathered into large and compact masses and are also arranged in columns separated by interlacing bands of hyalinized connective tissue which is highly vascularized. The arrangement is very orderly and there is no objective indication of malignant growth. Frequently cells are disposed around blood vessels in a radial manner. No acini are found. Individual cells have round or oval, moderately or densely chromatic nuclei and no nucleoli. Only an occasional mitotic figure is present. Usually the cytoplasm is difficult to demarcate although in some areas it is evidently abundant."

COURSE

The catheter was removed from the chest, and the negative pressure discontinued on the third post-operative day. The remainder of the hospital stay was uneventful, and she was discharged on the 14th hospital day. Since her discharge she has continued to improve, and now leads a normal regime.

XUM

COMMENT

While the location of this peripheral adenoma does not coincide with those cases reported, the tumor presents many of the features peculiar to these benign adenomas of bronchial origin. This is manifested in the age of the patient, the presence of hemoptysis as a persisting and predominating symptom, but, more important, by the definite similarity in the microscopical picture. Hamperl, in a lengthy presentation of nine cases in 1937, pointed out certain very definite histological characteristics occurring in these lesions. These are essentially the variation in the cell type from polygonal to cuboidal, and occasionally columnar and their arrangement in solid masses or palisades. As a rule, they have oval or round nuclei that are usually densely chromatic. In addition, he states the stroma is delicate, highly vascular and with frequent areas of hyalinization.

CONCLUSION

A tumor occurring in the periphery of the right middle lobe, of a type hitherto reported only in the bronchi of the first and second order, and its favorable response to partial lobectomy is reported.

I would like to express my appreciation to Dr. Arnold Strauss, of the Hospital of St. Vincent dePaul, and to Dr. Simon Koletsky, of the Institute of Pathology, Western Reserve University, Cleveland, Ohio, for their interest and histological study of the tumor.

BIBLIOGRAPHY

Wessler, H., and Rabin, C. B.: Benign Tumors of the Bronchus. *Am. J. of Med. Sc.*, 183; 164, February, 1932.

Kramer, R., and Som, M. L.: Further Study of Adenoma of the Bronchus. *Annals of Otology, Rhinology and Laryngology*, 44; 1935; p. 861.

Hamperl, H.: Benign Bronchial Tumors (Cylindromas and Carcinoid); *Virchow's Archives;* 300; 1937; p. 46.

Jackson, Chevalier: Esophagoscopy, Bronchoscopy and Gastroscopy. W. B. Saunders Company, Philadelphia. 1922.

Jordan, H. E.: A Textbook of Histology; p. 274.

509 *Professional Building.*

PRESENT DAY STATUS OF ANESTHESIA

LEO V. HAND, M.D.,
The Department of Anesthesia,
The Lahey Clinic,
Boston, Massachusetts.

In keeping with the general trend in medicine rapid strides have been made in the specialty of anesthesiology. These advances have been made in each of the following branches of anesthesia: (1) the preoperative evaluation of the patient for anesthesia and surgery; (2) the responsibility for preoperative and frequently postoperative medication; (3) the supervision of fluid therapy—operative and frequently postoperative; (4) the responsibility for all gas therapy; (5) the treatment of certain post-operative or postanesthetic complications, and (6) the administration of the anesthetic. To elaborate briefly on each of the above topics:

Preoperative Evaluation: It is the duty of the anesthetist to be familiar with every physiologic item that may influence not only the operative course but also the convalescence. These include:[34] (a) the vigor, age, degree of anemia, dehydration, and respiratory and cardiac reserve of the patient; (b) presence of fever, diseases of the liver, kidneys and metabolism, and (c) length of confinement in bed and surgical prognosis of the disease.

A few concrete examples of preoperative preparation are: the intravenous administration of saline, glucose, plasma or whole blood for dehydration, anemia or shock; digitalization combined with bed rest for low cardiac reserve; high carbohydrate regimen for diseases of the liver; iodine and glucose for hyperthyroidism, and insulin and glucose for diabetic patients.

Medication: The selection of medication is dependent on the experience and competence of the physician ordering it and the patient's tolerance to the drugs employed. The more universally employed drugs for preoperative medication are from three main groups: (a) the opium derivatives, (b) the belladonna derivatives, and (c) the barbituric acid derivatives. Among the opium derivatives morphia, pantopon or dilaudid are commonly used. Among the belladonna derivatives, scopolamine or atropine are

used. The barbituric acid derivatives employed are divided into short acting and longer acting drugs. Among the short acting drugs are delvinal sodium, seconal and pentobarbital; among the longer acting drugs are sodium amytal and neonal.

Postoperative medication may influence tremendously the convalescence. Too little results in unnecessary discomfort to the patient. Too much will unnecessarily depress the patient, and predispose to pulmonary complications such as atelectasis, or abdominal complications such as ileus with resultant distention. The recent work of Slaughter and his coworkers[28] relative to the potentiation of morphia by prostigmine may prove to be a valuable factor in lessening postoperative complications due to depressant medication.

Fluid Therapy: The supervision[30] of fluid therapy not only deals with the treatment of shock but also in its prevention. The following examples are a few illustrations of this supervision: (1) The preoperative clysis, either venoclysis or hypodermoclysis, for the patient about to undergo major surgery, for example, a hypodermoclysis of 5 per cent glucose and saline prior to radical mastectomy. This hypodermoclysis frequently inhibits the onset of shock noted with such an operative procedure. (2) The administration of preoperative blood transfusion in patients with severe anemia or marked debilitation prior to their operation. (3) The administration of an intravenous infusion either of glucose, saline or blood, depending on indications, is of value in preventing shock in extensive operative procedures. (4) The postoperative administration of 10 per cent glucose with iodine in toxic thyroid patients is one factor tending to inhibit the occurrence of thyroid crisis.

Gas Therapy: Gas therapy should include not only the administration of certain agents for inhalation anesthesia but also those agents and methods employed for specific therapeutic purposes. (1) Helium and oxygen[2] mixtures are employed for the relief of status asthmaticus. (2) High oxygen concentrations[7] are administered for the treatment of respiratory, cardic, metabolic or abdominal disturbances such as pneumonia, cardic failure, thyroid crises or storm, or abdominal distention.

Complications: Of the many postoperative complications that may arise, there are two of special interest to the anesthetist. The first, pulmonary, is atelectasis in one of three forms: (a) massive, or involving an entire lung; (b) partial, or involving one lobe; (c) patchy or lobular in nature, involving many small areas within one or more lung fields. When more conservative measures fail to relieve this condition, this complication is adequately handled[5] by postoperative suction either by tracheal cathether or by suction bronchoscopy at the earliest sign of trouble and not waiting until it has fully developed. The second common complication is abdominal distention. High concentrations[7] of oxygen are utilized for the relief of that frequently present postoperative complication.

Administration of Anesthesia: The administration of anesthesia is the original and still the primary function of the anesthetist. In this function, rapid strides have been made in the following four subdivisions. (1) In the study of explosive hazards and their prevention; (2) in the employment of inhalation anesthesia with carbon dioxide absorption with or without intratracheal intubation; (3) in the administration of new agents and methods for spinal anesthesia, and (4) in the introduction of new drugs for intravenous anesthesia. The purpose of this paper is to review briefly these four advances, together with two important postoperative duties of the anesthetist, that is, the treatment of atelectasis and abdominal distention.

EXPLOSIVE HAZARDS AND THEIR PREVENTION

Contrary to popular opinion, until recently there were only two anesthetic agents or combinations employed in inhalation anesthesia that were non-explosive. They were nitrous oxide and chloroform. Chloroform[25] is a relatively dangerous agent due to the potential toxic effects on the liver and heart muscle. Nitrous oxide alone is an inadequate anesthetic to produce surgical relaxation. Concentrations necessary to produce surgical relaxation usually interfere with the oxygen[4] requirements of tissue. Table 1, prepared by Professor Hottel,[13] Associate Professor of Chemical Engineering, Massachusetts Institute of Technology, illustrates the explosive limits of some gases mixed with air or oxygen. Five of these gases are now employed in anesthesia; ethylene, cyclopropane, ether, ethyl chloride and vinyl ether, either alone or in combinations. Ethyl chloride should be sparingly used as an inhalation agent because of the narrow range between the anesthetic and the lethal dose. Of the five gases employed in anesthesia, the optimal anesthesia range is within

XUM

TABLE I
TABLE OF EXPLOSIVE LIMITS OF SOME GASES MIXED WITH AIR OR OXYGEN (UPWARD PROPAGATION OF FLAME)

Gas	Chemical Formula	One Volume Gas Requires for Complete Combustion: Oxygen, Volumes	Air, Volumes	Explosive Limits* with Air: Lower Limit	Most Explosive Mixture†	Upper Limit	Explosive Limits* with Oxygen: Lower Limit	Most Explosive Mixture	Upper Limit
Methane	CH_4	2.0	9.5	5.3	11.0	14.0	5.4	36	60
Ethane	C_2H_6	3.5	16.6	3.2	6.6	12.5	4.1	24	50
Propane	C_3H_8	5.0	23.8	2.4	4.7	9.5		18	
Butane	C_4H_{10}	6.5	30.9	1.9	3.7	8.4		15	
Ethylene	C_2H_4	3.0	14.3	2.8	7.6	28.6	2.9	27	80
Propylene	C_3H_6	4.5	21.4	2.0	5.2	11.1	2.1	20	52.8
Cyclopropane	C_3H_6	4.5	21.4	2.4	5.2	10.3	2.5	20	63
Butylene	C_4H_8	6.0	28.5	1.7	4.0	9.0		16	
Ether	$C_4H_{10}O$	6.0	28.5	1.7	4.0	26. ‡	2.1	16	32
Ethyl chloride	C_2H_5Cl	3.0	14.3	4.0	7.6	14.8			
Vinyl ether	C_4H_6O	5.0	23.8	1.7	4.7	27.0	1.8	18	85

the explosive limits in all with the exception of ethylene. The ideal percentage for anesthesia with ethylene alone is 80 to 85 per cent ethylene; additions of oxygen with resultant lessening of these percentages of ethylene may bring ethylene within the explosive range. The mixture of nitrous oxide, oxygen, ether, considered by many to be innocuous, is potentially as dangerous as a mixture of cyclopropane-oxygen.

The greatest danger of ignition of explosive gases comes from the elusive static spark because it cannot be determined when and where it will appear. At the present time the two main measures of protection against explosion are either to employ non-explosive mixtures[13] of gases or to employ some method of intercoupling[12,35] between the patient, the anesthetist, the table and the gas machine. These four bodies (Fig. 1*a*) are the major condensers intimately associated with the gas mixtures.

While studies to eliminate static spark are in progress, recent investigations with mixtures of two explosive agents with oxygen may result in non-explosive anesthetic mixtures.[12A] This work is still in the investigative and laboratory stage.

The methods of safeguarding against spark are either to ground[35] the four bodies which may hold material charges (Fig. 1*b*) of static or to intercouple[12] them directly one to another without grounding. Research in methods of satisfactory grounding is now in progress, such as conductive rubber for shoes, mattings, castors and floor coverings. Until these studies are complete and have been adopted throughout all hospitals, direct intercoupling of these four bodies in proximity to explosive mixtures is the simplest and most acceptable of routine performance for protection. The intercoupler unit designed by Professor J. W. Horton,[35] Department of Biological Engineering, Massachusetts Institute of Technology, is

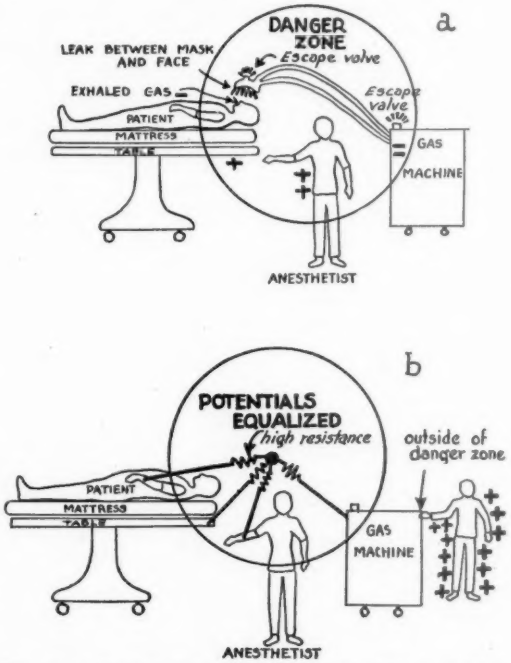


Fig. 1.—a, Dangers from gas leaks in the absence of intercoupling. b, Reduction of tendency of intercoupled bodies to act as a single body of high electrostatic capacity by high resistance intercoupling.

the best to date. This unit is a high resistance conductor across which static will leap without hot spark potential and which will choke currents of low voltage and high amperage, such as stray

*Numbers given are per cent by volume of gas in gas-air or gas-oxygen mixture.
†Based on 85 per cent theoretic air or 90 per cent theoretic oxygen.
‡Variously reported at 10 to 48 (cool flame phenomenon).

house currents. This unit provides five terminals and is so arranged that the resistance between any pair of terminals is 1 megohm (one million ohms). Any five bodies connected to the terminals are maintained at the same electrostatic potential. The use of this high resistance intercoupling eliminates certain risks which are involved in direct coupling by means of wires or chains. Any current from the lighting circuit which might accidentally pass through intercoupling connections is limited to magnitudes which are not dangerous. The intercoupled bodies are also prevented from acting as a single electrostatic condenser of high capacity. This is desirable in order not to increase the energy in any spark which might be received from unintercoupled bodies.

Together with intercoupling, the usual precautions against static spark must be adhered to. High humidity should be maintained. Bag and breathing tubes should be wetted before starting anesthesia. The breathing bags should not be disconnected during the operation nor until the mask has been removed from the patient's face. Silk and woolen outer garments should be prohibited. The anesthetist's stool should have no cushion. Woolen blankets and gas machine covers should not be used. The usual precautions against flames, sparks, cautery and similar hazards should be maintained.

INHALATION ANESTHESIA WITH CARBON DIOXIDE ABSORPTION PLUS INTRATRACHEAL INTUBATION

Since the original clinical investigation by Waters[31] in 1923 on closed system methods of anesthesia with absorption of the exhaled carbon dioxide, many articles have appeared advocating this principle in all types of inhalation anesthesia. The principle involved is the constant rebreathing of the anesthetic agent, without loss of potency, in a closed system with the removal of the exhaled carbon dioxide by means of soda lime through which the gases pass; and the replenishment of the amount of oxygen for necessary metabolic activity. The advantages of such a principle are threefold: (1) With adequate precautions in the use of a closed system with no leakage it permits the employment of certain anesthetic mixtures which, though in themselves are highly explosive, in many operations are pharmacologically indicated for the well-being of the patient. (2) The closed system[33] with carbon dioxide absorption results in a thorough elimination of carbon dioxide so that respirations are quiet. It also permits the anesthetist to assure control of respiration when indicated.[8] (3) There is a tremendous saving[33] in the quantity of gaseous agents necessary for maintaining anesthesia, which is an important item when expensive agents such as cyclopropane are used.

There are two methods of carbon dioxide absorption. The original method is the to-and-fro method of Waters,[31] in which the anesthetic gases pass back and forth through a canister of soda lime situated between the mask and the rebreathing bag. The second is the circle method[29] (Fig. 2) in which the

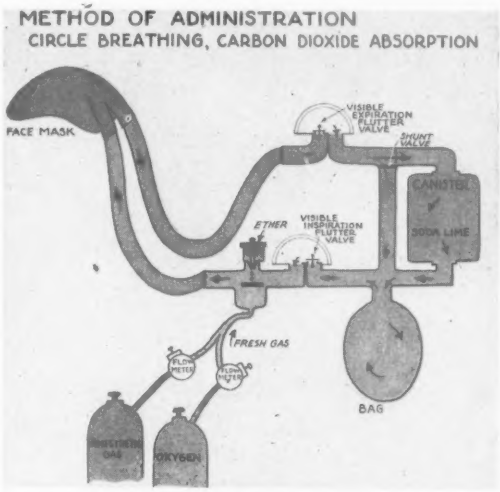


Fig. 2.—The circle breathing, carbon dioxide absorption method of administering an anesthesia.

gases flow in one direction through directional valves in a closed circuit in which a canister of soda lime is placed. The advantages and disadvantages of each I shall not elaborate on, but will merely present a summary of the recent findings of Adriani and Rovenstine[1] in their laboratory investigations of each method. "The variation of efficiency of absorption at various temperatures was considered negligible for practical significance . . . These observations indicate that when tidal volume is equivalent to the air space in the filled canister, optimal efficiency is obtained . . . Gram for gram the ultimate efficiency is approximately identical in both systems (to-and-fro and circle systems) . . . (In the circle system) the temperature of the reacting soda lime is about 5 degrees less than in the to-and-fro type . . . (The to-and-fro type) This type produces a positive pressure in the mask of 2.5 mm. of water and a negative pressure of 3.0 mm. of water . . . In the circle type

under optimal conditions the resistance varies from —8 to+8 mm. of water . . . (Bacterial investigations) Results indicate that the possibility of cross infection, by using a canister for one patient and immediately for another, in both systems is remote."

Another advancement in inhalation anesthesia is in intratracheal intubation. This procedure insures an unobstructed air passage from the lips or nostrils to or near the bifurcation of the trachea by means of a special tube or catheter, either rubber, rubber composition or flexible metal in structure. From the exterior to the vocal cords the route is either transnasal with a rubber catheter or transoral with a composition or a flexible metal catheter. This method insures a patent airway not only for the administration of oxygen and anesthetic mixtures but also for aspiration of secretions that might accumulate in the tracheobronchial tree during the operation, such as (a) bronchiectatic secretions, or (b) intrapulmonary hemorrhages that may occur in some thoracic operations. In certain operations where mild or marked obstructive symptoms are present it is a life-saving procedure. It is especially indicated[26] in the following types of thyroid and allied pathologic conditions: (1) cancer of the thyroid; (2) large intrathoracic goiters: (3) paralysis of vocal cords; (4) large adenomatous goiters with resultant tracheal compression and deviation.

The use of intratracheal intubation with inflation of a tracheal balloon cuff within the trachea around the catheter not only insures a closed system but also prevents seepage or aspiration of nasal and pharyngeal secretions into the lungs in operations about the head or mouth. This method, with the use of adapters to the gas conduits, is an advantage in operations about the head.[6] It results in very little apparatus for anesthesia in this area that might limit the operative field.

NEW AGENTS AND METHODS FOR SPINAL ANESTHESIA

Spinal anesthesia has been the subject of much controversy. The chief objections are: (1) the possibility of harmful effects to the central nervous system; (2) its circulatory depressive effect, and (3) its limited and frequently too short duration. These objections result not because of the use but rather the abuse of this type of anesthesia. The following examples are but a few of these abuses. The first example is the administration by a careless or incompetent individual resulting in lumbar puncture trauma with resultant spinal cord injury. A second example is the injection of too large or too toxic a dose, or the injection of an entirely wrong drug with resultant injury to the spinal cord. A third example is the inefficient or careless supervision of the anesthesia following injection. This usually results: (1) in an undersirable degree of intercostal paralysis from too high an anesthesia; (2) in states of shock occasionally with fatal complication, due not alone to the anesthesia but also the progress of the

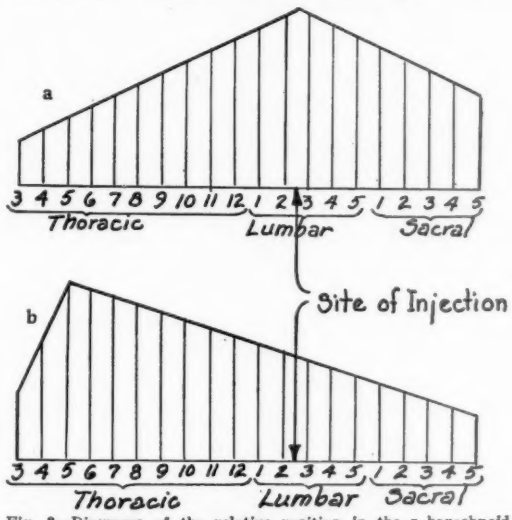

a
3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 1 2 3 4 5
Thoracic
Lumbar
Sacral
Site of Injection
b
3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 1 2 3 4 5
Thoracic
Lumbar
Sacral

Fig. 3—Diagrams of the relative position in the subarachnoid space of concentrations of spinal agents with (a) ordinary barbotage and (b) glucose gravity technics.

operation. Preventives or corrective measures instituted early enough will prevent these states. A fourth example is the injudicious selection of cases for this particular method of anesthesia. The chief onus on spinal anesthesia comes from this very cause; all too frequently spinal anesthesia is elected for the following reason: The patient is desperately ill and any other method might result in a fatality. Thus, paradoxically, spinal anesthesia is too dangerous for a good risk patient but is indicated for a very poor risk patient.

Recent developments in agents and methods of administration or technics have completely eliminated the third objection of limited or too short duration of anesthesia. The usual duration with pontocaine is from one and one-half to two and one-half hours, depending on the site of the operation. The usual duration of anesthesia with nupercaine is from two to three and a half hours. Anesthesia of

longer duration is now obtained when continuous or fractional spinal anesthesia is used. There are many technics or modifications of conventional technics for spinal anesthetic agents.

Pontocaine for spinal anesthesia is obtainable in a 1 per cent solution in normal saline or in a powdered form known as pontocaine niphanoid. The manufacturers claim for this powdered form that there is less tendency of deterioration on prolonged standing, compared to the solution. The three prevalent technics with pontocaine are: (1) the original method[19] with pontocaine solution plus spinal fluid; (2) the mixture of pontocaine and procaine,[20] and (3) the mixture of pontocaine, 1 per cent solution, with varying concentrations of 10 per cent glucose, reported by Sise[27] and preferred by the author.

This addition of glucose results in a mixture that is heavier than spinal fluid mixture (hyperbaric). By the use of the Sise technic (gravity method), the maximal concentration of drug in the subarachnoid space is deposited at or around the nerve roots supplying the site of operation (Fig. 3), thus resulting in the maximal concentration of anesthesia in these areas.

Nupercaine is obtainable in dilutions of 1:200, 1:500, 1:1000, 1:1500, and 1:2000 solutions. Various technics with nupercaine may be subdivided according to the nature of the solution employed: those heavier than spinal fluid (hyperbaric) and those lighter than spinal fluid (hypobaric). The author has had little experience with the hyperbaric solution and will mention only the three prevalent technics. The original method of Keyes and McLellan[15] uses the 1:200 solution in a buffer salt solution plus spinal fluid. The second is the technic of Romberger,[23] combining procaine and nupercaine. The third and more recent is the technic reported by Sankey and Whitacre[24] of a 1:1500 dilution of nupercaine with glucose.

There are three classical technics with hypobaric solutions of nupercaine; Kirschner's, Wilson's and Jones'. Basicly, the Kirschner[16] technic is with

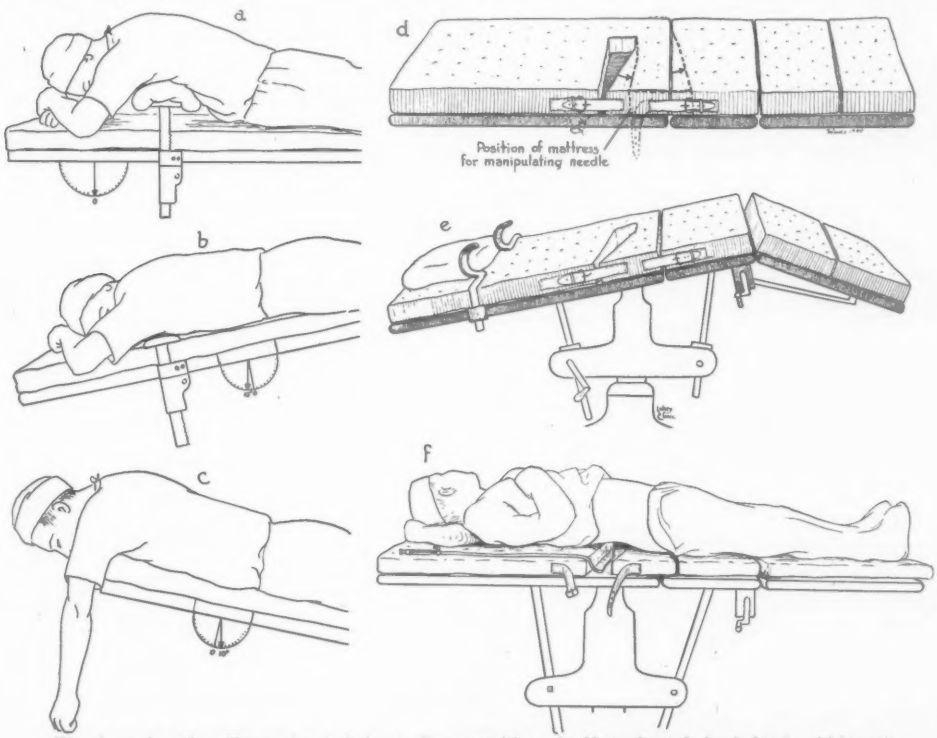


Fig. 4.—a, b and c, Nupercaine technic. a, Prone position, shoulders elevated, head down, with agent settling in thoracic portion at high level. b, Trendelenburg position prior to turning patient supine after adequate height of anesthesia is obtained. c, Optimal position to obtain height of anesthesia. d, e and f, Fractional spinal anesthesia. d, Special mattress with cut out portion. e, Mattress with shoulder braces and break, for Trendelenburg position. f, Patient in position, needle *in situ*, syringe at head of patient, connected with needle by rubber tubing.

XUM

the patient in steep Trendelenburg position, spinal fluid is withdrawn to a certain level and then the remaining spinal fluid is overlaid with a measured quantity of nupercaine solution resulting in a segmental nerve block. Fundamentally, Wilson's[32] technic is the injection of warmed hypobaric solution with the patient in the upright or vertical position and remaining thus for a matter of predetermined seconds and then immediately placed in Trendelenburg position. With the Jones'[14] technic, the injection is made with the patient in the horizontal position. He is then turned prone to obtain adequate sensory anesthesia and then turned supine to obtain adequate motor relaxation. Further cephalad rise in anesthesia is safeguarded against by the employment of Trendelenburg position prior to turning the patient. Of the many modifications of Jones' technic, the author[11] prefers that of Woodbridge (Fig. 4 *a, b* and *c*).

The method of continuous or fractional spinal anesthesia, devised and reported by Lemmon,[17] is becoming increasingly popular particularly for operations of unpredictable duration. Anesthesia can be obtained for a period of minutes or maintained over a period of hours, depending on the duration of the operation. Nicholson, Eversole and Hand[22] have recently published a report on this method of administering spinal anesthesia. The principle involved is the injection of small, fractional doses of an anesthetic agent as indicated by means of an indwelling, soft, malleable alloy (nickeloid) needle. This needle is connected with a 10 cc. syringe by means of a 30 inch length of small bore, thick-walled rubber tubing, with Luer-Lok stopcock and connections for syringe and needle. A special thick mattress (Fig 4 *d* and *e*) with a cut-out section protects this needle from contact with the table or mattress proper. This cut-out section comes under the lumbar spinal area when the patient is supine (Fig. 4 *f*). Clinical investigations[9] are now in progress to determine the better agent and dilution for fractional anesthesia.

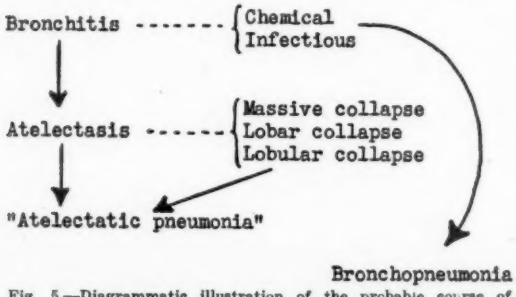


Fig. 5.—Diagrammatic illustration of the probable course of events in the development of many postoperative pulmonary complications in patients with bronchitis.

INTRAVENOUS ANESTHESIA

While intravenous anesthesia dates back to 1872 it is only with the introduction of short acting barbiturates such as evipal soluble and sodium pentothal[18] that intravenous anesthesia has become a more satisfactory procedure. The chief advantages of this method of anesthesia are: (1) the induction is usually rapid, pleasant and smooth; (2) the agent is non-explosive, thus permitting the use of diathermy, cautery or x-rays or fluoroscopy; (3) the recovery is pleasant with the usual striking absence of vomiting and the variable period of amnesia.

Carraway[3] advocates the use of the barbiturates as a primary anesthetic for all types of operations. It is the author's opinion that the best results are obtained when the barbiturates are used as a primary anesthesia only in minor procedures, such as short bone and joint operations, encephalography,[21] and other short neurologic procedures, and painful dressings, or as a complementary agent[10] together with adequate oxygen, for the comfort of the patient when spinal anesthesia is the primary anesthesia.

POSTOPERATIVE SUCTION BRONCHOSCOPY

There are certain postoperative pulmonary complications that may be treated by suction bronchoscopy. This treatment is well within the field of the anesthetist.

It has been fairly well established that the development of postoperative pulmonary complications is influenced very little by the agent used to produce anesthesia. The clinical picture and the rapidity of development of many pulmonary difficulties seem best explained on an atelectatic basis with the following contributing factors: (1) the presence of bronchitis, either chemical or infectious in origin; (2) decreased lung aeration due to elevation of the diaphragm following upper abdominal operations; (3) the voluntary shallow respiratory efforts to minimize pain from abdominal wounds; (4) the splinting of the respiratory excursions by too tight binders. The diagrams[5] in Figure 5 illustrate the probable chain of events in pulmonary complications in patients with bronchitis. The ultimate prognosis depends on the amount of lung involved and the

promptness with which the complication is adequately treated.

Eversole[5] states: "When one or more lobes of the lungs are suddenly collapsed the signs and symptoms at first are those that result from the actual mechanical changes in the chest. The symptoms are usually quite sudden in onset, and are largely those of acute oxygen want. There is a sharp rise in temperature and in the respiratory rate. There may be evidence of considerable respiratory embarrassment and some degree of cyanosis usually is present. The roentgenologic picture shows decreased aeration of the lung on the affected side, with a shift of the mediastinum toward that side. There is usually an elevation of the diaphragm on the affected side.

"When a smaller portion of the lung is involved such as one or more lobules the symptoms are not so striking or so acute in onset. There is no marked respiratory embarrassment and cyanosis may be only slight or even entirely absent. There is usually a rise in temperature but this rise is not so sudden as when one or more lobes of the lung are involved. With lobular atelectasis the clinical course as well as the roentgenologic appearance of the chest may very closely simulate bronchopneumonia. There is little doubt that, if unrelieved, lobular atelectasis will eventually result in pneumonia."

Considerations in the prevention of atelectatic complications include: (1) frequent turning of the patient and urging him to cough up any accumulated fluid in the respiratory tree; (2) cautious use of respiratory depressive drugs for the relief of pain or to produce sleep. The value of carbon dioxide as a preventive of complications is questioned.

When conservative measures fail, immediate active measures should be instituted to remove the fluid. The simplest method is the aspiration of the secretions in the trachea by means of a fairly large urethral catheter (22 to 24 French) passed into the larynx by means of forceps under direct laryngoscopic vision. When atelectasis due to occlusion of an air passage is present, the most efficient and surest method of treatment is the aspiration of the secretions in the respiratory passages by means of suction bronchoscopy.[5]

TREATMENT OF DISTENTION WITH HIGH OXYGEN CONCENTRATIONS

Abdominal distention is a disturbing postoperative complication. The basic cause is the accumulation of gas in the gastro-intestinal tract. Laboratory investigation has demonstrated that the chief constituent of this gas is inert and very slowly absorbable nitrogen. Among the many methods of treating distention are: (1) use of a rectal tube; (2) use of drugs to stimulate peristalsis as pilocarpine and prostigmine; (3) counter-irritant to the abdomen as turpentine stupes, external heat and so forth. Recent investigators,[7] keeping in mind the tendency of the body to the equilibrium of gases conceived the idea of placing the patient with distention in an atmosphere of "100 per cent" oxygen so the end result would be the reduction of nitrogen in the intestinal tract by its replacement with oxygen.

The physiologic principles involved are the saturation of the pulmonary passages with "100 per cent" oxygen with subsequent removal or flushing out of all inert waste gases. With the saturation of the pulmonary passages, a gradual state of gaseous equilibrium is reached between the excess of oxygen in the lungs and excess of nitrogen in the intestinal tract through the blood stream. While this equilibrium is in progress the oxygen in the gastro-intestinal tract as well as that in the lungs is being utilized by the body tissues, with the resultant deflation or lessening of distention in the alimentary tract.

SUMMARY

1. The specialty of anesthesiology covers more than the simple administration of anesthesia.

2. Preoperative evaluation and preparation of the patient are within this specialty.

3. Medication is derived from three main groups; the opium, belladonna and barbituric acid derivatives. The proper amount depends on the tolerance of the patient plus the judgment of the individual ordering it.

4. Fluid therapy influences not only the operative course but also the postoperative convalescence.

5. The knowledge of gas therapy is essential in its employment for specific therapeutic purposes.

6. The anesthetist shall be competent to prevent or treat certain postoperative complications of the respiratory or gastro-intestinal tract.

7. The problem of explosive hazard is being investigated and gradually eliminated by studies directed to: (a) the rendering of gaseous mixtures non-explosive and (b) devising means to eliminate the potential dangers of spark and ignition from static electricity.

XUM

8. The employment of methods of carbon dioxide absorption is an aid in the use of explosive and expensive anesthetic agents.

9. Intratracheal intubation not only prevents respiratory obstruction but also insures a ready method for the aspiration of secretions if necessary.

10. New agents and methods for spinal anesthesia plus competent administration and supervision have eliminated most objections to this form of anesthesia.

11. Certain agents and methods result in optimal states of anesthesia; for instance, pontocaine-glucose for concentrations of anesthesia in the upper abdomen, and fractional spinal for operations of preoperatively unpredictable duration.

12. The use of short acting barbiturates has revived the employment of intravenous anesthesia with its many favorable effects. The author recommends its use as a primary agent in minor procedures only.

13. The early recognition of postoperative pulmonary complications or impending complications with the early treatment of such by either simple aspiration or bronchoscopy cannot be stressed too strongly.

14. High concentrations of oxygen by means of adequate equipment have been added to the accepted methods of conservative treatment of postoperative abdominal distention.

BIBLIOGRAPHY

1. Adriani, J., and Rovenstine, A. E.: Experimental Studies on Carbon Dioxide Absorbers for Anesthesia. *Anesthesiol.*, 2:1-19, January, 1941.
2. Barach, A. L.: Recent Advances in Inhalation Therapy in the Treatment of Cardiac and Respiratory Disease. *New York State J. Med.*, 37:1095-1110, June 15, 1937.
3. Carraway, B. M., and Carraway, C. N.: Intravenous Anesthesia, a Clinical Study of 1,900 Cases. *Am. J. Surg.*, 39:576-580, March, 1938.
4. Courville, C. B.: Asphyxia As a Consequence of Nitrous Oxide Anesthesia. *Medicine*, 15:129-245, May, 1936.
5. Eversole, U. H.: The Prevention and Treatment of Postoperative Pulmonary Complications. *Anesthesiol.*, 1:72-82, July, 1940.
6. Eversole, U. H.: Anesthesia for Surgery About the Head. *J. Am. Med. Assn.*, 117:1760-1763, November 22, 1941.
7. Fine, J., Hermanson, L., and Frehling, S.: Further Clinical Experiences with 95 Per Cent Oxygen for the Absorption of Air from the Body Tissues. *Ann. Surg.*, 107:1-13, January, 1938.
8. Guedel, A. E.: Cyclopropane Anesthesia. *Anesthesiol.*, 1:13-30, July, 1940.
9. Hand, L. V., and Schuhmacher, L. F.: Pontocaine-Glucose Solution for Fractional Spinal Anesthesia. *Lahey Clin. Bull.*, 2:167-173, October, 1941.
10. Hand, L. V., and Sise, L. F.: Intravenous Agents As Supplementary Anesthesia. *Lahey Clin. Bull.*, 1:18-21, March, 1939.
11. Hand, L. V., and Sise, L. F.: Nupercaine Anesthesia. *Surg., Gynec. and Obst.*, 71:9-21, July, 1940.
12. Horton, J. W.: Present Status of the Problem of Preventing Anesthetic Explosions. *Anesthesiol.*, 2:121-137, March, 1941.

12A. Horton, J. W.: Hazards in the Use of Explosive Anesthetics. *Bull. Am. Assn. Nurse Anesthetists*, 8:285, November, 1940.

13. Hottel, H. C.: Personal Communication to the Author.
14. Jones, W. H.: Spinal Analgesia; a New Method and a New Drug,—Percaine. *Brit. J. Anaes.*, 7:99-113, April; 146-156, July, 1930.
15. Keyes, E. L., and McLellan, A. M.: Preliminary Report on New Local Anesthetic (Nupercain). *Am. J. Surg.*, 9:1-8, July, 1930.
16. Kirschner: Beiträge zur willkürlichen Begrenzung und zur individuellen Dosierung der Spinalanästhesie. *Arch. f. klin. Chir.*, 173:322-383, 1932.
17. Lemmon, W. T.: A Method for Continuous Spinal Anesthesia. *Ann. Surg.*, 111:141-144, January, 1940.
18. Lundy, J. S., and Adams, R. C.: Intravenous Anesthesia. *Anesthesiol.*, 1:145-152, September, 1940.
19. Marvin, F. W.: Pantocain in Spinal Anesthesia. *New England J. Med.*, 207:368-370, August 25, 1932.
20. McCuskey, C. F.: Pantocain As a Spinal Anesthetic. *Anesth. and Analg.*, 12:116-118, May-June, 1933.
21. Nicholson, M. J., and Sise, L. F.: Pentothal Sodium Anesthesia for Encephalography. *New England J. Med.*, 222:994-996, June 13, 1940.
22. Nicholson, M. J., Eversole, U. H., and Hand, L. V.: Fractional Spinal Anesthesia. *Am. J. Surg.*, 53:403-411, September, 1941.
23. Romberger, F. T.: Combined Novocaine-Nupercaine Spinal Anesthesia. *Am. J. Surg.*, 11:471-477, March, 1931.
24. Sankey, B. B., and Whitacre, R. J.: Nupercaine and Dextrose. *Anesthesiol.*, 2:203-204, March, 1941.
25. Sheehan, H. L.: The Pathology of Acute Yellow Atrophy and Delayed Chloroform Poisoning. Abstract in *Canadian Med. Assn. J.*, 43:188, August, 1940.
26. Sise, L. F.: The Technique of Intratracheal Anesthesia. *Surg. Clin. N. Amer.*, 14:1049-1071, October, 1934.
27. Sise, L. F.: Pontocain-Glucose Solution for Spinal Anesthesia. *Surg. Clin. N. Amer.*, 15:1501-1511, December, 1935; 16:1707-1711, December, 1936.
28. Slaughter, D., Parsons, J. C., and Munal, H. D.: New Clinical Aspects of the Analgesic Action of Morphine. *J. Am. Med. Assn.*, 115:2058-2060, December 14, 1940.

29. Sword, B. C.: The Closed Circle Method of Administration of Gas Anesthesia. *Anesth. and Analg.*, 9:198-202, September-October, 1930.
30. Tovell, R. M., and Patterson, R. L.: Intravenous Therapy. *Anesth. and Analg.*, 19:171-175, May-June, 1940.
31. Waters, R. M.: Advantages and Technique of Carbon Dioxid Filtration with Inhalation Anesthesia. *Anesth. and Analg.*, 5:160-162, June, 1926.
32. Wilson, W. E.: Intra-Thecal Nerve Rootlet Block; Some Contributions; a New Technique. *Anesth. and Analg.*, 14:102-110, May-June, 1935.
33. Woodbridge, P. D.: Better Gas Anesthesia; Carbon Dioxide Absorption Method. *New England J. Med.*, 208:632-640, March 23, 1933.
34. Woodbridge, P. D.: Cyclopedia of Medicine, Surgery and Specialties. Philadelphia, F. A. Davis Company, 1939, pp. 476-483.
35. Woodbridge, P. D., Horton, J. W., and Connell, Karl: Prevention of Ignition of Anesthetic Gases by Static Spark. *J. Am. Med. Assn.*, 113:740-744, August 26, 1939.

PARTIAL GASTRECTOMY FOR CHRONIC ULCER*

M. K. KING, M.D., F.A.C.S.,
P. A. Surgeon, U. S. P. H. S.,
U. S. Marine Hospital,
Norfolk, Virginia.

In the past two and one-half years, forty-six patients have been operated on in this hospital for various lesions of the stomach and duodenum. Eighteen have had high gastric resections for chronic ulcer, with no deaths. Resections were done only on intractable or complicated cases. All of the patients operated upon have returned to their occupations and are leading essentially normal lives, except one who committed suicide. Many of them are seamen, and are unable to follow even a modified dietary regime. Yet there has been no recurrence of ulcer in any of these patients.

FIG. 1

HOSPITAL ADMISSIONS JANUARY 1, 1939, TO JULY 1, 1941	10,268	
TOTAL ULCER PATIENTS TREATED IN ABOVE PERIOD	92	GASTRIC ULCERS 21 DUODENAL ULCERS 71
ULCERS TREATED BY GASTRIC RESECTION	18	RESECTIONS FOR GASTRIC ULCERS 8 (38.9% OF CASES TREATED) RESECTIONS FOR DUODENAL ULCERS 10 (15.8% OF CASES TREATED)
DEATHS FOLLOWING GASTRIC RESECTION	0	

The eighteen cases treated by gastric resection were taken from a total of ninety-two ulcer patients and from over ten thousand hospital admissions. There were twenty-one gastric and seventy-one duodenal lesions in the group.

The percentage of gastric ulcers treated by surgery was much higher than duodenal ulcers—as shown on the accompanying diagram (Fig. 1). All patients with chronic ulcer except those showing perforation or obstruction were given a thorough trial on conservative treatment before surgery was considered. If the ulcer did not heal under medical management and remain healed on a simple dietary regime, operation was considered. Where recent hemorrhage had occurred, operation was delayed. One or more massive hemorrhages from recurrent or chronic ulcer was considered sufficient cause for delayed gastric resection. Obstruction and chronic perforation in contrast were operated upon early. There is little reason for delay in obstruction, although more conservative surgery is frequently indicated.

Our attitude toward gastric ulcer is much more radical than toward duodenal ulcer. It is frequently difficult to differentiate gastric ulcer from gastric malignancy clinically or roentgenologically and we feel that all doubtful cases should have the benefit of early exploration. In the majority of cases of

*Read at a recent meeting of the Norfolk County Medical Society.

gastric ulcer we carry out a brief course of medical therapy. If the ulcer does not rapidly decrease in size roentgenologically and show clinical evidence of healing, operation is considered (Fig. 2.).

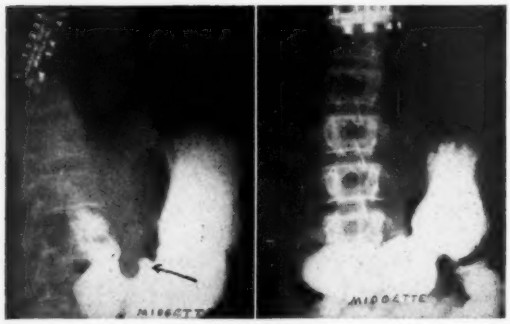


Fig. 2.—A. Penetrating ulcer on lesser curvature, treated conservatively.
B. Plate made after a few weeks of treatment. Ulcer deformity has disappeared and patient is free of symptoms.

There are many factors to be taken into consideration in deciding to subject an ulcer patient to surgery. Gastric resection is a major operative procedure and it cannot be performed promiscuously without high mortality. Patients must be carefully selected as to their fitness to withstand such a procedure. They must be carefully prepared. The operation must be carried out in a technically correct manner, and the postoperative care must be skillful and untiring. If these principles are carried out, the mortality can be kept down to a very low figure. In five hundred gastric resections reported from the Mayo Clinic, the mortality was 4.1 per cent, as compared with one thousand gastro-enterostomies in which mortality was 2.1 per cent.[1] These figures compare favorably with those from other large clinics. In another group reported from the same clinic, the mortality was 1.9 per cent for two hundred and twelve partial gastrectomies.[2] This is well below the general average. It is almost universally agreed that the recurrence rate of ulcer following gastro-enterostomy is many times higher than that following high gastric resection. When the mortality for secondary operations following gastro-enterostomy is taken into consideration and added to the primary mortality rate, the total is probably higher than that for primary partial gastrectomy. It would appear that partial gastrectomy most adequately fulfills the requirements for the treatment of chronic ulcer where surgery is indicated.

Most chronic ulcer patients have been on an inadequate diet over a prolonged period of time and are suffering from some degree of malnutrition. The popular Sippy diet leaves much to be desired and is lacking in several important elements. Avitaminosis is common; blood plasma levels are frequently low. In preparing patients for operation, an effort should be made to restore blood plasma levels to a normal of above seven grams per cent. High protein feedings is the best means of accomplishing this where possible, but it may be supplemented by plasma infusions or whole blood. Our plasma bank has been of invaluable aid to some of these patients. Where the red blood count is low, whole blood is especially indicated, and if possible no patient should be operated on with a red blood cell count under four million per cubic millimeter. Cevitamic acid has been shown to be extremely important in wound healing and should be supplied in abundance for at least one week prior to operation. The B complex and especially thiamine chloride has

Fig. 3.—A. Ulcer high on lesser curvature, no response to conservative therapy.
B. Plate made following high gastric resection. Complete relief of symptoms and patient is carrying on his usual occupation.

a very important, but ill defined role in promoting smooth convalescence. It is possible that it acts as a catalyst to fluid exchange through the cell membrane and aids in this way to maintain water balance. It should be supplied in excess both prior to and following operation.

Cardiac disease is not a definite contra-indication to stomach surgery when the heart is well compensated, and it is surprising how well cardiac patients withstand operation.

Prior to surgery the fluid and electrolyte balances may usually be taken care of through oral feedings, unless obstruction is present.

We use spinal anesthesia almost routinely. Two cubic centimeters of ten per cent pontocaine solution is given at the second lumbar interspace, and by gravity the anesthesia is allowed to reach the fourth dorsal segment. This would be adequate were it not for the rather forceful traction sometimes necessary in delivering the cardiac portion of the stomach. The discomfort from this traction is relieved by splanchnic block, using forty cubic centimeters of one per cent novocain. Incidentally we have used continuous spinal anesthesia in a few cases but have not found it preferable to the single dose of pontocaine combined with splanchnic block.

It is our practice to start an intravenous infusion of five per cent glucose in normal saline at the beginning of every gastric operation and later to switch in five hundred cubic centimeters of previously matched whole bank blood. If the operation has been long there may be some tightening of the abdominal muscles interfering with closure of the abdomen. A few cubic centimeters of five per cent pentothal solution introduced into the infusion tubing will relieve this straining and discomfort without the necessity of producing complete narcosis. There is rarely any postoperative nausea or vomiting and the patient on return to his room shows no evidence of shock. It is unnecessary to stress the extreme importance of preventing primary operative shock in promoting smooth recovery.

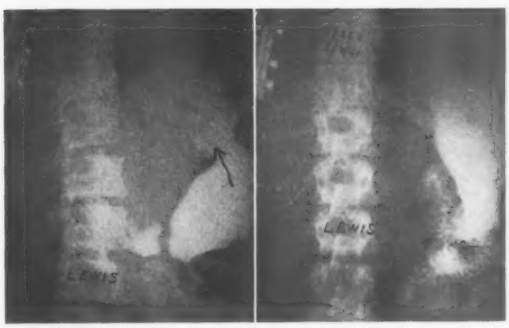


Fig. 4.—A. Chronic perforation of ulcer high on posterior wall, with considerable cicatrization and spasticity. Treated by partial gastric resection.
B. Plate made following partial resection. Patient now symptom-free.

Our operative methods are along fairly standardized lines, but are varied slightly to suit the individual case. A midline incision is preferred and closure is done with silk. Fine silk is used to reinforce all anastomoses, especially at the angles, and to reinforce the closure of the duodenal stump. Angulation and constrictions are carefully avoided. We remove approximately two-thirds of the stomach in the average case, or enough to get rid of the major acid-bearing area. The remaining stomach is anastomosed to the upper jejunum anterior to the transverse colon. To us, it appears of academic interest whether the jejunum is placed isoperistaltic or antiperistaltic. Sometimes we use one, sometimes the other method, depending on which allows the bowel to lie most naturally. They both appear to function equally well (Fig. 3). There is one point which we would especially like to stress, that is the avoidance of using any clamps or instruments which crush tissue in the region of the anastomosis. We rarely use any clamps, but especially avoid the heavy crushing type, which delay healing and invite edema about the stoma.

Postoperative care is fully as important as the technical aspect of operation. Continuous gastric suction is maintained and the patient is allowed to drink water freely as long as the suction functions well. Liquid feedings are started in forty-eight hours with the tube clamped off. If well tolerated the tube is removed and semi-solids are given in frequent small feedings. We replace the tube at the slightest sign of distention. Soft food is usually well tolerated by the fourth or fifth day.

It has been shown to be of paramount importance in gastric surgery that the water balance be maintained. Plasma protein levels if allowed to fall permit edema about the anastomosis and interfere with emptying. We therefore supply five hundred to one thousand cubic centimeters of plasma in saline daily until adequate food can be taken by mouth. If the red count or hemoglobin is low whole blood should be substituted for plasma. Considerable electrolytes are lost in the gastric lavage and urine. We have found ten to twenty-five grams of sodium chloride in the stomach washings for a twenty-four hour period. It requires almost three thousand cubic centimeters of normal saline solution to supply twenty-five grams of sodium chloride. It is a good plan to check blood chlorides and plasma protein levels daily, as well as the chlorides lost in urine and gastric lavage.

Usually two thousand five hundred to three thousand five hundred cubic centimeters of intravenous fluids daily will take care of body needs while gastric suction is being maintained. Most of this

XUM

is supplied in the form of five per cent glucose in normal saline solution.

One of the disadvantages of the continuous gastric suction is that mucus collects in the pharnyx and trachea and predisposes to atelectasis. To prevent this the patient is turned frequently, deep breathing and coughing are encouraged, water by mouth is permitted freely, and excessive sedation is

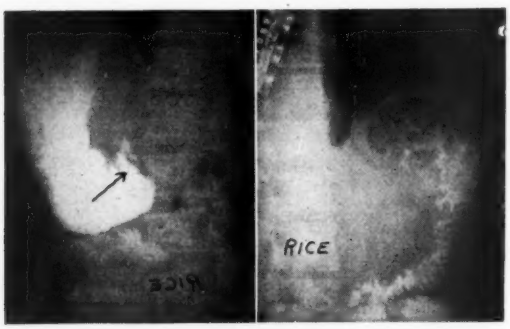


Fig. 5.—A. Chronic obstructive duodenal ulcer; perforation 18 months previously. No relief from prolonged medical therapy. Treated by partial gastric resection.
B. Plate made following high gastric resection. He is now returned to duty and is symptom free.

avoided. If mucus still collects or atelectasis appears imminent, the tube should be removed for short periods of time and then replaced.

It is with considerable satisfaction that we have noted the increasing importance which is being attached to physiology in surgical patients in recent years. There have been few recent technical improvements but the physiological approach is reflected in the general lowering of mortality in all major surgery. No where is this more true than in gastric surgery. Certainly in the past the technical aspect has been allowed to dominate the picture. Important as it is, we believe surgical technic will be subordinated in the future to physiology, and through broader application of physiological principles, the quality of surgical treatment will continue to improve (Figs. 4 and 5).

SUMMARY

1. Eighteen partial gastric resections were done for chronic ulcer. These patients were selected from ninety-two suffering with ulcer of the stomach or duodenum.

2. There were no deaths in the cases treated by gastric resection. All apparently recovered from the disease and there have been no recurrences of ulcer.

3. We attribute the absence of mortality to careful selection of patients, adequate preparation, careful attention to technical details at operation, adequate postoperative care, and observance of the physiological principles involved in this type of surgery.

BIBLIOGRAPHY

1. Waters, Waltman, Gray, H. K., and Priestly, J. T.: Surgical Report for 1938 on Lesions of the Stomach and Duodenum. Proc. Staff Meet., Mayo Clin., 14:807-814, December 20, 1939.
2. Priestly, J. T.: Duodenal Ulcer, Proc. Staff Meet., Mayo Clin., 15:707-709, November 6, 1940.

INDICATIONS FOR TERMINATING ARTIFICIAL PNEUMOTHORAX*

C. P. CAKE, M.D.,
Medical Director, Tuberculosis Division, Gallinger Municipal Hospital, Washington, D. C.

The decision as to when an artificial pneumothorax should be terminated is often difficult because our knowledge of the criteria for doing so is still incomplete. Each case must be considered individually and no general statement which will apply to all cases can be made.

The most important consideration in making a decision as to how long an artificial pneumothorax should be continued is the type of lesion which is present at the start of the treatment. It seems quite obvious that a lesion which is exudative in nature and shows no demonstrable cavitation will not require as long to become arrested as one which is characterized by thick-walled cavities or fibrocaseous disease.

In reckoning the time which must elapse before an artificial pneumothorax should be terminated, the actual date upon which the treatment was started is not the one to be considered. The reckoning should begin from the time that a satisfactory collapse, as evidenced by closure of all cavities, conversion of the sputum from the positive to nega-

*Read at the first regular meeting of the Society of Chest Physicians of Virginia, held in Richmond, March 31, 1942.

tive and disappearance of evidences of activity of the disease is obtained. Should cavities at any time reopen or the sputum become positive, the time should be reckoned from the time the cavities are again closed and the sputum again becomes negative.

The minimum time after the achievement of a satisfactory collapse that an artificial pneumothorax should be maintained is two years. The cases which fall in the class of those which require this minimum are those which originally present lesions which are predominantly exudative in character and which fall within the minimal or early moderately advanced classifications.

The extent of the lesions has less influence upon the necessary duration of the artificial pneumothorax than does the type of lesion present. Lesions which present large cavities or cavities with thick, irregular walls require longer to heal than those with smaller or thinner walled cavities. The chronicity of the lesions is also an important consideration, a more chronic lesion requiring longer to become arrested.

An important criterion of the time an artificial pneumothorax should be maintained is the rapidity with which the cavities close and the maximum degree of collapse of the affected lobe is obtained. The rapid closure of cavities and the rapid and extensive collapse of the affected lobe indicates a greater power of contracting on the part of the fibrous tissue in the lesions, which promises more rapid and more complete healing. This phenomenon is best illustrated by the selective collapse which occurs in certain cases.

In more chronic cases with more extensive fibrosis, the retraction of the lobe will be slower because the fibrous tissue has probably already expended a large part of its contracting power and the walls of the cavities are thicker and more rigid, and therefore slower to close. Healing will therefore be retarded and the required duration of the collapse necessarily longer.

Therefore, in determining the necessary duration of an artificial pneumothorax, a valuable yard-stick is the rate of cavity closure and lobar retraction observed in the individual case. When the closure or the lobar retraction is rapid, the minimum of two years may be sufficient, but when this takes several months or a year, the duration may have to be extended for a long time, or perhaps forever. Durations of five to eight years are not infrequently considered necessary.

There are certain cases which at the onset of the treatment presented large, thick-walled cavities which require a long time to close and a long time to obtain a persistently negative sputum. In these cases the maintenance of a permanent pneumothorax, or the substitution of a thoracoplasty for the pneumothorax to maintain the collapse should be considered. It is often a difficult question to decide. The patient will probably be doing well with his artificial pneumothorax and it is not at all certain that he will survive an extensive resection of his ribs or that he will obtain the type of collapse he needs from the thoracoplasty. Therefore, it seems that the wisest course to take is to postpone the termination of the artificial pneumothorax indefinitely.

When an apparently successful collapse has been maintained for what seems sufficient time to accomplish healing of the tuberculosis process, certain other considerations must be taken into account before the collapsed lung is permitted to re-expand. The general physical condition of the patient is important. If there are such indications of ill-health as undue fatigue, poor nutrition, anorexia, or any other of the symptoms of chronic tuberculosis, one should assume that healing is not complete and termination of the artificial pneumothorax should be postponed. Further, it should be determined that the leukocytic index and the red blood cell sedimentation rate are normal.

It is also important to test the effectiveness of the collapse under the conditions of work or activity which the patient will have to observe after his lung has re-expanded. For this reason he should have maintained himself in good health for at least six months with his artificial pneumothorax before it is terminated.

When artificial pneumothorax becomes complicated by certain of the various conditions which sometimes develop during the course of the treatment, the question of whether or not to continue the collapse must be considered. In general, it may be said that the decision will depend upon the condition of the collapsed lung and the effectiveness of the collapse, as well as the nature of the complication.

XUM

The development of clear effusion, or even empyema, does not indicate re-expansion of the lung if there are still active lesions remaining in it. The collapse should be maintained while appropriate treatment of the complication is carried out.

The development of a contra-lateral spread of the disease is not always an indication for termination of an artificial pneumothorax. If it seems feasible, bilateral artificial pneumothorax may be instituted. In some cases, however, the spread may be so extensive as to render the prognosis hopeless, and in such cases it is futile to continue the unilateral collapse and it is best to discontinue it.

In certain patients who have impaired circulatory systems, collapse of the lung by artificial pneumothorax results in symptoms of circulatory failure of more or less severity. When these are severe, the artificial pneumothorax may have to be terminated. However, in other cases the circulatory failure can be compensated by digitalization and the artificial pneumothorax continued. In these cases the decision whether or not to terminate the artificial pneumothorax will depend upon whether or not the complication can be so controlled.

Then there are certain patients who are rendered dyspneic by collapse of the lung because of too great reduction of their respiratory capacity which may have already been reduced by pulmonary fibrosis, emphysema, etc. If a satisfactory degree of collapse cannot be maintained within the limits of their respiratory capacity the artificial pneumothorax should be discontinued.

What has been said to this point has had to do with the duration or termination of a successful artificial pneumothorax. It is also of importance to decide when an unsatisfactory pneumothorax should be terminated. This is true because to continue an ineffective artificial pneumothorax indefinitely is to court disaster without hope of materially benefiting the patient. It has been our observation that the cases of pneumothorax which develop the most serious complications are those in which an ineffective collapse is persisted in. Therefore, when it becomes apparent that a satisfactory collapse of the affected lung cannot be obtained even with the addition of other procedures, such as pneumonolysis or phrenic nerve interruption, termination of the artificial pneumothorax should be seriously considered.

If the patient's general physical condition is such that he can safely undergo surgery, the artificial pneumothorax should be terminated at once and some other collapse measure instituted. If his genral condition has not shown definite improvement and it seems unlikely that he will ever be a candidate for other more radical collapse measures, the artificial pneumothorax should be terminated. In our experience it has proven to be futile to continue an ineffectual collapse in such patients, and to do so may actually shorten their lives due to the complications which may occur.

The only cases in which there is a justification for continuing an unsatisfactory artificial pneumothorax are those who show a marked general improvement even with their ineffective collapse and with a little more improvement in their general condition may be rendered fit subjects for more radical surgery. In these cases the unsatisfactory artificial pneumothorax should be terminated as soon as the desired conditions are achieved.

In conclusion, we believe that the minimum time which should elapse between the time when all evidences of tuberculosis activity—open cavities, tubercle bacilli in the sputum, and toxic symptoms—disappear and the termination of an artificial pneumothorax is two years. This minimum should be applied only to the relatively early cases which at the start of the treatment present no cavitation or only small thin-walled cavities and in which a maximum of retraction of the affected lobe and closure of the cavities is achieved early in the course of the treatment.

The more chronic the case at the start of the treatment, the longer the artificial pneumothorax should be continued. Durations of three to five years are required in many cases and durations of five to eight years are not uncommon. In a few cases it seems wiser to postpone termination indefinitely.

Before an apparently successful artificial pneumothorax is abandoned, the patient should have maintained good health for at least six months under the conditions of activity under which it will be necessary for him to live. Poor general physical condition or any symptoms of chronic tuberculosis contra-indicate re-expansion of a lung which is apparently satisfactorily collapsed.

The development of pleural effusion or empyema

does not necessarily indicate re-expansion of an effectively collapsed lung. Contra-lateral spread of the disease indicates termination of an artificial pneumothorax only when it is so extensive that it renders the prognosis hopeless.

Artificial pneumothorax should be terminated in the presence of uncontrolled circulatory failure and in patients whose respiratory reserve has been so impaired by the pulmonary pathology that an effectual collapse is incompatible with proper oxygenation of the blood.

An ineffective artificial pneumothorax should be terminated as soon as it becomes apparent that it cannot be made effective by the addition of other measures, unless it seems apparent that by continuing the unsatisfactory collapse the patient's general condition can be improved so that he will later become a candidate for surgery.

STONES IN FEMALE URETHRA

W. LLOYD EASTLACK, M.D.,
South Boston, Virginia.

Stones in the female urethra are not commonly seen in general practice, but there are usually two or three cases reported each year in urological literature. I have made no exhaustive search in preparation of this paper, but I was impressed by the similarity of certain features of this condition in studying the cases collectively. Stones in the male urethra are much more common, as can be expected from the anatomical structure.

Diverticula undoubtedly precede the formation of stones in the female urethra, and their development is not absolutely clear. According to Hugh Cabot, there are no glands in the proximal two-thirds of the urethra which might be forerunners, but there are crypts which might allow pooling of urine or harboring gravel. Andrew McNally, who has done a great deal of work on female urethral diverticula, and other workers, think that, due to the difference in embryology, the congenital type is rare, while Herbert E. Schmitz offers proof of this type. All agree, however, that the important factors of the acquired type are structural weakness, trauma, and infection.

Accepting that diverticula are the predisposing causes of stone, Maper's description of the three principal causes of stone formation in this anatomical location are without priority: (1) Metabolic disturbance of urinary secretion, which causes a clinical change, and precipitation of salts that are normally dissolved. (2) A hydraulic and physical disturbance of micturition following a change in the caliber of the urethra, or anatomic deformities which favor retention and precipitation of urinary salts. (3) Foreign bodies in the urethra.

In the cases reviewed I might say that the symptoms are conspicuous by their absence, until late, when the stone has reached such proportions as to offer obstruction. All of the cases had mild symptoms for 12 years or longer, which might have been attributed to a low grade cystitis in the beginning, with frequency, burning and tenesmus, apparently never requiring urological consultation until the mass had become large enough to feel, as in the case I will report. Many, however, later will give definite and very disturbing urinary symptoms which might be divided into (1) Local, such as incontinence or obstruction, perineal pain or pain on sitting, and a feeling of fullness in the vagina with painful intercourse, and (2) General urinary symptoms with recurring attacks of cystitis, persistent urinary infection, with exacerbations of frequency, urgency, chills, fever and backache, suggesting an ascending pyelonephritis.

The presence of stone might easily be overlooked in routine examination unless large enough to arouse suspicion, and not until then would the necessary specialized measures be instituted to make the diagnosis. X-ray, to be sure, is most important, but urethroscopy and injection of opaque media before X-ray are essential to accurately locate the stone which in most cases is in the middle third of the urethra. With the urethroscope the ostium of the cavity holding the stone can usually be seen and, if the urethra is distended, the glistening stone surface can be seen. This procedure might determine the method of removing the stone.

Until the last ten years not much attention had been given the female urethra. At the University

XUM

of California Hospital up to May 1936, the diagnosis of urethral diverticulum (forerunner of stone) had been made only twice. Interest was thus aroused and during the next year nine cases were demonstrated.

Conditions which might be confused with urethral stones, such as tumor, urethrocele or thick walled diverticulum, can easily be ruled out with X-ray and urethroscopy.

Treatment resolves itself into removal of the stone. This can be done, first, by crushing the stone through the urethra if the opening is large enough and the stone small enough, washing the fragments from within the diverticulum and scarifying the walls to obliterate it. This method was used successfully by Franklin D. Edwards and L. E. Bedders in their case. The other method is open operation through the vagina, carefully dissecting out the diverticulum and ligating same at the junction of the urethra. This method was used by Eugene A. Gaston and Joseph Ferrucci, which case is almost identical to the case I wish to present, except for the single stone.

The latter method is undoubtedly the one of choice with large stones. The diverticulum can be removed at the same time with assurance of no recurrence of stone or after symptoms from the sac. Suturing to occlude the sac could not safely be done, and scarification of the walls is blind and certainly could not be relied upon to obliterate it.

CASE REPOT

Mrs. H. F., 41 years of age, consulted her family physician after having missed two menstrual periods. Pregnancy was diagnosed, but examination of the patient revealed a hard lump in the anterior wall of the vagina for which I was consulted. Since the birth of her last child 3 years ago, patient claimed only minor urinary symptoms, consisting of burning, tenesmus, urgency, frequency and occasional hematuria, but never severe enough, she thought, to consult a doctor.

After delivery of her first child 18 years ago she was told by her physician that a small lump about the size of a pea existed in the anterior wall of the vagina. Nothing was done about it and she has given birth to eight living children since. Patient has never been sick except during childbirth.

Examination revealed a well developed and nourished female of about 40 years. Nothing grossly abnormal could be found except an enlarged uterus of about 2 months pregnancy and a mass the size of a walnut in the anterior vaginal wall. It was hard, freely movable, and elicited a grating sensation when palpated between the fingers.

Urine examination revealed one plus albumen with a few pus and blood cells.

A urethroscope was passed and about 5 cms. up in the posterior wall of the uretha was found a small opening about ½ cm. in diameter with a glistening white surface below, which felt hard on probing. The bladder was cystoscoped and found normal. X-ray was made with catheter in the urethra and 12% sodium iodide instilled into the bladder. The stones were apparent as in Figure 1.

Figure 1.

Operation was advised, because of the size of the stones, and accepted.

Technic: General anesthesia was used because of the temperament of the patient. A 24F catheter was first put in the urethra as a guide, then a transverse incision was made in the anterior wall of the vagina and the mucous membrane dissected back. A little posterior to this line of incision the denser fibrous and muscular tissue was incised to the diverticulous sac and dissected back in all directions as far as possible. The sac was then opened and the two stones shown in Figure 2 delivered. The diverticulum was then dissected out, tied off at the neck and removed. The fibrous and muscular tissue was closed with 0 chromic and the mucous membrane closed with 00 chromic. None of the suture lines of the different layers approximated. An indwelling

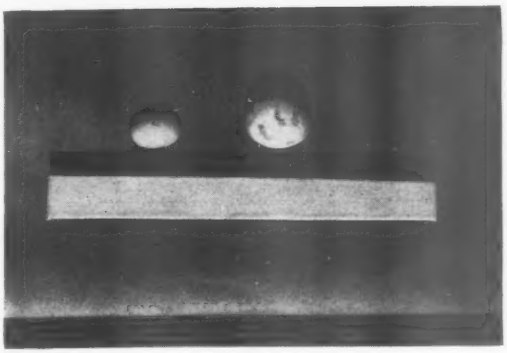


Figure 2.

catheter was left in the bladder 2 days and irrigated with boric acid every 4 hours. Healing was quick and to my knowledge never leaked urine. Seen 6 weeks after operation a solution of methylene blue was forced through the urethral meatus into the bladder, and none was found in the vagina.

CONCLUSIONS

1. The length of time required for urethral stones to form would naturally vary, depending on urinary chemistry, or type of obstruction, if this be the case, but in all reports encountered, where time could definitely be established, it was over ten years.

2. While all cases had definite symptoms, they appeared in the majority after the stones had become large, and in most cases were not severe.

3. Many women are seen in office practice, especially those having had children, with vague, recurrent urinary symptoms. It might be well to keep in mind not only the rare urethral calculus, but its forerunner diverticulum, which occurs more often than realized.

REFERENCES

Gaston and Ferrucci: *New England Jour. of Med.*, 221:379-383, September, 1939.

Andrew McNally: *American J. of Surgery*, 28:69, July, 1935.

Hugh Cabot: Proc. Staff Meeting, Mayo Clinic, 11:589-591, September, 1936.

Clark M. Johnson: *J. Urology*, 39:506-516, April, 1938.

Edwards and Dedders. *J.M.A. Georgia*, 28:449-451, November, 1939.

Herbert E. Schmitz.: *Urology and Cutaneocs Review*, 43: 596-598, September, 1939.

CURRENT INFORMATION ON SYPHILIS

Sponsored by
COMMITTEE ON SYPHILIS CONTROL
MEDICAL SOCIETY OF VIRGINIA

Social Aspect of Late Medical Syphilis

It is unnecessary to repeat the figures showing the general incidence of syphilis. Newspapers, magazines, radio broadcasts as well as medical publications have already made this general information. It cannot be debated that this widespread infection is a serious handicap to human welfare. The untoward effect of this disease on the happiness, comfort, efficiency and life expectancy is colossal. It is hard to visualize the harmfulness of syphilis on the 10,000,000 Americans affected by it.

The major part of a discussion in the current campaign has been on the subject of preventing early syphilis. As practical public health for the protection of future generations this may be justified, but the latent and late syphilitic should not be ignored. Proper management of latent and late syphilis benefits greatly the individual by improving his health status and preventing incurable complications as well as gives protection to others by preventing infectious relapses.

Actually the main justification for a widespread campaign against syphilis is that it prevents damage in the later stages to the human mechanism. The great majority of the cases of primary and secondary syphilis are able to continue their routine responsibilities, that is, there is very little morbidity. The effort to find early syphilis and treat it properly is chiefly to prevent late syphilis.

A brief review of the pathologic-physiology and immunology of a syphilitic would give a clearer conception of what happens in the body during late syphilis. The Treponema pallida gains entrance through the skin or mucous membrane and begins to multiply. They spread about and into the lymphatic and blood vessels, quickly stimulating a mild local reaction and producing a septicemia. The local reaction is characterized by edema, a cellular exudate, multiplication of fibrous tissue cells and a thickening of the vessel walls. The organisms reaching the blood stream are scattered to all parts of the body and there in turn are produced the same types of

XUM

local reactions. After a period of 14-120 days, a recognizable lesion may appear. This is the chancre or secondaries or both.

It is true that these recognizable lesions may not always appear either because of their insignificance, inaccessibility or absence. Many people have acquired syphilis and are not aware of it. Many physicians examine patients with various complaints who have syphilis without knowing it and should therefore do routine serological tests on every patient. Accidental infections from intermediate objects, a cough or sneeze in the face or other contact with germs are frequent.

The Treponemata which have spread to the tissues start the same kind of pathologic reaction. Here as in the first stages of the infection, the tissues attempt to protect themselves by resisting the parasite. The resistance though is only partially complete in syphilis. The organisms may disappear or subside in many foci, then the body's defence relaxes and there is a local or general relapse. Again the cycle of reproduction, tissue reaction, resistance and relapse occurs. The functioning cells of the tissue are gradualy replaced by fibrous cells or scar formation. As Stokes says, the syphilitic continues to live on his "parenchymatous reserve".

Damage to the organs or parts of organs occurs as a result of scar formation, occlusion or weakening of blood vessels or a hypersensitiveness of the cells to the infecting agent. The latter along with circulatory damage produces the gummatous lesion.

No tissue of the body is exempt from the effect of the Treponema pallida. The clinician then may find abnormality anywhere from the "crown of the head to the soles of the feet". A recital of the structures of the body with these types of changes would be the possibilities of late syphilis. This would require much time and many volumes.

With this background one can appreciate the truthfulness of Osler's recommendation to medical students, "know syphilis in all its manifestations and relations and all other things clinical will be added unto you." In individual cases the predominating pathological changes vary. The nervous system is one of the favorite locations. The heart and large blood vessels, liver, lungs, stomach, intestines, spleen, pancreas, skin, bones, cartilages, muscles, tendons, joints, blood forming organs, lymph glands, mediastinum, fetus in the uterus, ovaries, testes, endocrine organs, eyes, other special sense organs, etc., etc., may be affected.

Syphilis is usually a slowly progressing disease. There follows an illustration of the hazards of this infection. Many other illustrations could be cited but this one emphasizes a number of practical angles from the social, medical and economic viewpoints of human welfare. The disabling period of a syphilitic infection so often occurs at the time when the individual is carrying his greatest responsibilities and when he is most capable of accomplishment. An individual at approximately the age of eighteen during the period of little discretion had what was thought to be an insignificant lesion. There followed inadequate or irregular treatment. The patient seemed to be in perfect health soon after. He goes through the period of irresponsibility, becomes an important force for good in the community. He may have inherited an estate to which additions have been made by his own ability. He has established his own home, become a husband and father. This usually requires about twenty years. This patient then begins to complain of substernal pain on exertion but routine medical examination reveals nothing abnormal. No Wassermann test is taken. One to two years later after a gradual increase in disability, the patient becomes incapacitated because of syphilitic heart disease. There may be an aneurysm of the aorta, partial occlusion of the coronary arteries and myocardial damage. No treatment at this stage is effective. Six months later in his early 40's this patient dies. Proper diagnosis and adequate early treatment would have prevented this. It is also just as true that the discovery of this patient's disease by routine serologic tests before irreparabe damage had been done and proper treatment would have prevented such an outcome.

The outcome in late syphilis does not always have such an unfavorable outlook. Many cases even in the late stages where other tissues are involved predominantly can be improved and some cured.

The most effective way to detect the hidden syphilis is the routine use of serologic tests. Every member of the population regardless of age, race, sex or social standing should have these serologic tests.

The progressing campaign against this "greatest killer of man" had already made the basic facts about the incidence, morbidity, mortality, mental agony, upset families, economic phases, etc., well known. It is also well known that scientific knowl-

edge is available for eradicating this malady and that the cost of doing so is not overwhelming. We should not defer the possibility of improving the human race by neglecting to vigorously combat this preventable infection. There would result a great saving from the point of view of dollars and cents both on the part of individuals, their families and the government. Industry could improve output, prevent accidents, and in many ways benefit by the eradication of syphilis. It will be money well spent to appropriate sufficient funds to eradicate this infection.

"Found: A One Day Cure for Syphilis"

In the *Reader's Digest* for September appears an article by Paul de Kruif entitled "Found: A One Day Cure for Syphilis," heralded by the editors of that periodical as "the medical sensation of the year." In this article Mr. de Kruif states that "now there actually is promise of a one day cure." He asserts without, of course, any basis in fact that "the standard eighteen month course of treatment is too painful, too dangerous, too prolonged for the mass cure of early syphilis." After describing certain experiments conducted by Drs. Walter M. Simpson, H. Worley Kendell and Donald L. Rose in the Miami Valley Hospital, he concludes:

> With a one day cure available, with plenty of doctors and nurses trained in fever therapy, and using equipment which costs little war material, we ought really to begin to wipe out the horror of syphilis. There are a million active cases in the United States. With this powerful new treatment, all persons found infected with active syphilis could be taken out of circulation and their danger to the community quickly abolished. The immediate expansion of this chemothermic treatment should bring hope to those countless hundreds of thousands who are inadequately treated or who are not treated at all. In the meantime, all those now under standard treatment should continue it until the new chemothermic treatment becomes generally available; this for their own as well as for the public safety.

As nearly as can be determined, all this effusion is based on a few paragraphs from an article on fever therapy by Drs. Walter M. Simpson, H. Worley Kendell and Donald Rose, published in the *British Journal of Venereal Diseases* for January-April 1941, in which the authors state:

> The present plan of treatment is as follows: A ten hour session of fever at 106 F. (41.1 C.) has been adopted tentatively as the initial unit of fever, since these limits have proved to be safe and practical in the management of patients with refractory gonococcic infection. Prior to the fever session a single injection of 4 grains of insoluble bismuth is administered intramuscularly. During the first seven hours of the height of fever, 240 mg. of mapharsen are administered intravenously by the slow intravenous drip method. No additional antisyphilitic therapy is given.

To this they append the following highly conservative opinion:

> While no conclusions are permissible since the period of post-therapy observation is as yet less than two years, the prompt resolution of clinical symptoms and the favorable serologic responses would indicate that further diligent inquiry is demanded. The results of this purely experimental undertaking will be made the subject of a later report.

In their ultimate "conclusions" they say:

> At the present time such treatment should be considered strictly experimental.
>
> The results achieved thus far should stimulate other investigators to engage in long term, controlled experiments with a view to the introduction of a more rapid, more certain, less dangerous and less costly method of treatment.

In a review of syphilis to appear soon in the *Archives of Internal Medicine,* Drs. Frank W. Reynolds, Charles F. Mohr and Joseph Earle Moore of Baltimore say:

> With his usual uncritical judgment, hyperenthusiasm and willingness prematurely to capitalize journalistically on sober scientific experimentation, de Kruif has unhappily drawn nationwide attention to this "one day cure" for syphilis. This tendency of medical journalists to raise false hopes in lay minds can only be deplored. With all due respect to democratic freedom of speech, it is too bad that no censorship exists to compel conservative accuracy from medical sensationalists.

This is another instance in which Mr. de Kruif has expanded preliminary medical investigations into announcements to the public that go far beyond anything that the available evidence could warrant. *The Journal* is being deluged with letters from physicians indicating that the article already is doing great harm in creating dissatisfaction among persons with syphilis as to time that may be required to bring about cure. Dr. Walter M. Simpson is an officer in the Bureau of Medicine and Surgery of the United States Navy and has been for some months away from contact with the continental United States. It is unfortunate that in his absence the statements of Mr. Paul de Kruif should have placed him and his research in such an unenviable position before the medical profession. — (*Editorial J.A.M.A.*, Sept. 5, 1942.)

XUM

MENTAL HYGIENE ACTIVITIES

The Purpose and Program of the Mental Hygiene Society of Virginia*.

The development of the mental hygiene movement in Virginia has taken place within the past forty years. The groundwork had, of course, been laid in previous years. The period between 1875 and 1900 was especially fruitful. It may be said, however, that modern psychiatry, and the beginnings of the broader aspects of mental health protection began almost exactly one hundred years ago, at about the time of the organization of the Association of Hospital Superintendents in 1844, and the beginning of the work of Dorothea Dix in 1841. Great advances were made in the twenty years from 1841 to 1861. War came and put an end to all of this, and for many years matters pertaining to the care of the insane and for mental health in general were almost forgotten. Especially was this true in the South.

As in 1841 when a New England school teacher, Dorothea Dix, gave the impetus for a great movement, so in the early years of the twentieth century a layman and young business man did likewise. The current chapter of the modern mental hygiene movement actually began when Clifford Beers entered a mental hospital as a patient in 1900.

In Virginia in that same year Dr. William F. Drewry, that incomparable psychiatrist and hospital administrator, was one of the sponsors in the organization of the Virginia Conference of Charities and Corrections, now known as the Virginia Conference of Social Work. Even though this State has been backward and slow in its acceptance of this modern mental hygiene movement, it can be said that Dr. Drewry and a few others left no stone unturned to keep this matter continuously before the people and those who had to do with making the laws for social welfare.

Mental health programs have been a large part of the work of this Conference. This phase of its work continued to grow to such an extent until in 1936 a committee was appointed to make plans for the organization of an independent mental hygiene group. So it was that on February 19, 1937, the Mental Hygiene Society of Virginia came into being with Dr. Beverley R. Tucker as its first president.

The objectives or purposes of the Society are the same now as they were five years ago except that the concept of some of them has been broadened and intensified. No opportunity has ever been lost to preach and teach mental hygiene to the people of Virginia. A restatement of these objectives is as follows:

1. Promoting a general recognition of the true nature and the established causes of mental disease and defect.
2. Advancing the methods of treatment and prevention.
3. Rationalizing and harmonizing the public attitude towards mental disease and hospitalization.
4. Securing suitable mental health legislation.
5. Working concurrently with Federal, State, local and private agencies in matters relating to mental health.

The Society was organized under the sponsorship of the National Committee for Mental Hygiene for the purpose of cooperating with other similar societies and groups now numbering over sixty throughout the country, in matters pertaining to mental health.

It is thought by many that because of the immensity of this problem and the slowness of apparent, effective and positive results, the average person and even some psychiatrists become discouraged and lose much of the interest and enthusiasm which they may have had. On the other hand it would seem that even the knowledge that this situation exists would challenge the best in every person who may be at all acquainted with the facts. Some of the reasons why the mental hygiene movement came into being and why the Mental Hygiene Society of Virginia is in existence are as follows:

1. There are over 650,000 mentally diseased and mentally defective patients under the care of mental institutions in the United States.
2. Over 50 per cent of all hospital beds in the United States are occupied by mental patients.
3. There are approximately 120,000 admissions to these institutions each year.
4. The net increase per year is approximately 20,000.

*Notes taken from a paper read before a regional meeting of the Mental Hygiene Society of Virginia at Marion, July 18, 1942.

5. The actual cost for maintaining mental institutions, considering capital invested and actual operating costs, may exceed $300,000,000 per year.
6. Capital invested in buildings and equipment, if averaged at only $1,500 per patient, would be well over one billion dollars.
7. The economic loss of mental disease and mental defect is almost incalculable but it would be well over another billion dollars in a single year.
8. The expectation for the future based on the present rate of admissions means that one out of every twenty-two persons living today will at some time be a patient in a mental hospital.
9. Viewing it from another angle, over 1,000,000 of the boys and girls now in our public schools may be expected to spend some portion of their lives in an institution for mental disease.
10. It is estimated that one out of every hundred of our public school children is afflicted with speech defects of some kind, such as, delayed talking or stammering, most of which are largely mental problems.
11. Of approximately 13,500,000 children in our country under five years of age, one third will show behavior difficulties of the kind treated in child guidance clinics; such as tantrums, nervousness, retardation, and the like.
12. Last but by no means least is the distress, and often heart-breaking situations, occurring in thousands of families and to other thousands of friends of those who are afflicted.

What is Virginia doing and what are we going to do to see that the mental health of our people may begin to take its place alongside the great progress which has been made in physical health?

1. Much has been done in the past five years in the improvement of treatment standards and the physical equipment of our State hospitals, but only a beginning has been made and the real job is still ahead. The Mental Hygiene Society of Virginia should place this as a number one item on their agenda and see that steps are taken by the proper authorities at the proper time to make our institutions treatment and training centers rather than for mere custodial care.
2. Coupled with this and the most important part of this No. 1 item is the matter of an adequate and trained hospital personnel, which would include physicians, nurses, attendants, occupational and recreational therapists, dietitians, social workers, and all the others needed for a modern treatment hospital. Virginia has never had anything approaching this, and now is a good time to at least be planning for it. First is need for physicians who are psychiatrists, and some close cooperation should be indulged in in this respect between our hospitals and the medical schools, not only with those in this State, but elsewhere. Next would be the matter of nurses who would be psychiatric nurses. Here again close cooperation with schools of nursing in general hospitals may be a good thing by offering accredited affiliate work in the State hospitals. One or more of the State hospitals should have nurse training schools. The ward attendant in a State hospital is the person who lives with and knows the patient better than anyone else. It is he that can do more for the patient either for ill or good than anyone on the hospital staff. This is a matter of extreme importance and emphasizes the need for continuous and intensive training.
3. At the instance of the friends of the mental hygiene program who were interested in its enlargement in Virginia, Senate Bill No. 141, now known as Chapter 160, Acts of the General Assembly, was introduced and passed. It authorizes the State Hospital Board, through the newly created Department of Mental Hygiene and Hospitals, to do the following:
    1. To establish and maintain out-patient clinics for the following purposes:
        a. To advise, counsel, direct and treat patients on furlough or parole from the hospitals or colonies.
        b. To extend these services to such former patients as may make application therefor.
        c. To extend these services to such other persons in need of psychiatric advice, counsel and guidance as may be referred by physicians or

XUM

by any public health or welfare agency.

2. To seek and encourage the cooperation and active participation of communities, organizations, agencies, and individuals in the effort to establish and maintain mental health programs and services.
3. Initiate and develop long range programs and plans with respect to mental hygiene and hospitals.
4. Develop programs of public information and education for the purpose of promoting an understanding and appreciation of State mental hygiene and hospital services.

This is the first time that the State of Virginia has ever placed on its statute books any law authorizing mental hygiene work outside the mental institutions. The Bureau of Mental Hygiene in the Department of Public Welfare has been in operation since 1928; but even though it was given the status of a bureau and performed a limited amount of outside clinical services, it has actually been part and parcel of the Children's Bureau of the same Department and has never held any specific legal status. The budget act for 1942-44 for the State Department of Public Welfare eliminates the "Bureau" status and actually makes it an integral part of the Children's Bureau.

This clinic, and the one connected with the University of Virginia Hospital and another with the Medical College of Virginia are the only efforts being made by the State in the field of prevention in the mental hygiene program. Outside of a very few private practitioners, the only other effort in this direction is the Children's Memorial Clinic in Richmond.

It is clear, therefore, that the crying need for Virginia is a well planned State-community effort directed towards the organization and maintenance of a State-wide system of mental health clinics, radiating from the various State hospitals and two medical schools. This effort should be directed by the Department of Mental Hygiene and Hospitals, which has already made a good beginning by making Dr. Joseph E. Barrett State Out-patient Clinic Supervisor, and has estalished several clinics in southwest Virginia. The success of the work of these clinics may be partially proven by one simple fact and that is the patient population of the Southwestern State Hospital is no greater now than it was four years ago. By this supervision in the clinics many persons are able to live happier and more useful lives at home than would be true if they were in the institution. Other cooperating agencies should be the State and local welfare and health departments, the State Board of Education and local school authorities, State and local medical societies, and the private practitioner. All of these and many more should begin now to make plans to strengthen the whole mental hygiene effort so as to make it impossible for the Legislature to refuse to appropriate the necessary funds for the execution of an effective, comprehensive, Statewide mental hygiene program.

F. W. GWALTNEY, *Executive Secretary.*

CASE REPORT OF MATERNAL DEATH

MATERNAL HEALTH COMMITTEE
MEDICAL SOCIETY OF VIRGINIA

The patient was an eighteen-year-old colored woman who had had two previous pregnancies. During the present pregnancy she had had no prenatal care. She was seen at term by a midwife after having had three or four convulsions. A stillborn macerated infant was delivered soon after the arrival of the midwife. The family stated that she had had headaches, spots before her eyes, ringing in her ears and pain in the upper part of the abdomen as well as swelling of the hands, face, and feet. Convulsions had appeared about twelve hours before the arrival of the midwife. Convulsions and coma continued postpartum and she was seen by a physician the following day who gave magnesium sulphate intravenously and morphine gr. one-fourth. The patient died thirty-six hours postpartum.

COMMENT

This is classified as a preventable obstetrical death because of total absence of prenatal care and the failure to employ any effective therapy for eclampsia after convulsions occurred. Adequate prenatal examinations with a reasonably intelligent interpretation of the findings would have detected the impending eclampsia and would have indicated immediate hospitalization, before convulsions appeared. After convulsions appeared the patient should have been referred to a hospital for adequate eclamptic therapy. Because of these failures this has been classified as a preventable death.

Public Health Statistics

I. C. RIGGIN, M. D.,
State Health Commissioner of Virginia

The report of the Bureau of Communicable Diseases of the State Department of Health for August 1942, compared with the same month in 1941, and for the period of January through August 1942, compared with the same period in 1941 follows:

	Aug. 1942	Aug. 1941	Jan.-Aug. 1942	Jan.-Aug. 1941
Typhoid and Paratyphoid Fever	55	35	155	132
Diarrhea and Dysentery	1,321	1,508	3,400	3,141
Measles	38	1,051	4,786	34,516
Scarlet Fever	44	53	781	961
Diphtheria	37	35	273	261
Poliomyelitis	8	28	21	50
Meningitis	7	13	124	80
Undulant Fever	5	1	22	8
Rocky Mountain Spotted Fever	16	9	41	24
Tularaemia	5	2	32	21

TYPHOID CARRIERS

For the past 20 years patients recovering from typhoid fever and suspected of being carriers have been reported to the Virginia State Health Department. All persons with no clinical history or an atypical febrile stage, but having positive cultures, have been added to this list. In the investigation of typhoid fever occurring sporadically in Virginia, these carriers are regarded as a probable source of infection in the locality in which they reside.

In 1941 the Bureau of Communicable Diseases instituted an intensive campaign to locate all proven carriers and persons who were suspected of being carriers within the boundaries of the State to determine their ability to spread typhoid fever by isolating the organism.

Approximately three per cent of those who have had typhoid fever remain carriers of the bacillus. Not all counties in the State show the presence of a carrier. However, it is realized that with the number of typhoid fever cases occurring annually, carriers permanent or transient must exist. It is necessary for the Health Department to determine the address and occupation of the carrier. The occupation at the time of discovery is of importance epidemiologically in tracing the route means of infection. Some of the histories obtained on these people go back 20 years and have been intermittently augmented when outbreaks of typhoid occurred in their family or close contacts.

Children as young as four years of age along with octogenarians have been found to harbor the organism. The laboratory tests made over a period of years have shown the showering out of typhoid bacilli in certain cases and seemingly a continuous discharge of the bacilli in other carriers. In reviewing the family roster of many cases it has been found that often those who have received typhoid vaccine, even years before, were those in the carrier's family who escaped the disease.

In counties having a local health organization, the health officer has a list of those who reside in his jurisdiction; periodically these persons are visited and instructed in personal hygienic measures. In the counties that do not have a full-time health service, a representative of the State Health Department in Richmond contacts the carriers and follows the same procedure. Not only are personal hygienic measures stressed, but the importance of sanitary measures, screening, and the care of handling food are emphasized.

The Virginia State Health Department intends to instruct children who carry the bacillus as intensively in personal hygiene as they receive instruction in school to read and write. This procedure is difficult but it is thought to be sufficiently important to merit the additional expenditure of time and effort.

Information from other states that a carrier possibly exists in a community is immediately investigated. In reciprocation, the State of Virginia notifies and requests information from the health authorities of other states as to the possibility of a citizen of the Commonwealth of Virginia contracting typhoid fever outside of the State boundaries.

At the present, of the 87 known carriers in Virginia, the residence of 52 has been verified within the past year, 10 the investigators were unable to locate, 22 have not been verified, and the remaining three probably are not carriers Of the 52 known carriers on whom recent histories were obtained, seven had resorted to surgical intervention.

XUM

Military Medicine

Virginia Doctors in Service
Supplement 2

In keeping with our policy to have a complete record of Virginia doctors in the various branches of the Services, we give herewith a second Supplement to the list in the July, 1942, issue. Names are given alphabetically with home addresses as it is impossible to keep up with the changes in the rank and Service.

We will appreciate having any reader advise of names that have been omitted.

MEMBERS OF MEDICAL SOCIETY OF VIRGINIA

Dr. John E. Alexander, Evansville, Ind.
Dr. D. L. Arey, Danville.
Dr. Robley D. Bates, Jr., Richmond.
Dr. Erwin S. Berlin, Wytheville.
Dr. John M. Bishop, Roanoke.
Dr. William F. Bryce, Richmond.
Dr. J. Lawson Cabaniss, Roanoke.
Dr. W. D. Chase, McLean.
Dr. Robert F. Cline, Winchester.
Dr. Algernon C. Davis, Roanoke.
Dr. William E. Dickerson, Danville.
Dr. Jerome Feldman, Richmond.
Dr. W. P. Frazer, Hamilton.
Dr. J. Arthur Gallant, Richmond.
Dr. James R. Grinels, Richmond.
Dr. Max L. Holland, Roanoke.
Dr. Thomas J. Humphries, Roanoke.
Dr. A. S. Hurt, Jr., Richmond.
Dr. E. C. Jamison, Rocky Mount.
Dr. Joseph Bernard Jones, Culpeper.
Dr. Benjamin M. Kagan, Richmond.
Dr. J. L. Kinzie, Salem.
Dr. Edmund LaPrade, Richmond.
Dr. Henry Lee, Roanoke.
Dr. Theodore B. McCord, Fairfax.
Dr. E. Berkeley Neal, Roanoke.
Dr. Thomas E. Painter, Pulaski.
Dr. William O. Porter, Roanoke.
Dr. C. L. Riley, Winchester.
Dr. Edwin M. Rucker, Richmond.
Dr. Andrew D. Shapiro, Roanoke.
Dr. Louis B. Sheppard, Richmond.
Dr. William C. Stephenson, Roanoke.
Dr. C. C. Trice, Richmond.
Dr. Harry J. Warthen, Richmond.
Dr. Ennion S. Williams, Richmond.
Dr. Mortimer H. Williams, Roanoke.
Dr. Munford R. Yates, Petersburg.

NON-MEMBERS

Dr. Felix Feamster, Lexington.
Dr. A. K. Jacob, Roanoke.
Dr. M. A. Johnson, III, Roanoke.
Dr. Wiley D. Lewis, Radford.
Dr. M. H. McClintic, Roanoke.
Dr. John Hope Moorman, Jr., Conicville.
Dr. Harold L. Nemuth, Richmond.
Dr. Roland Robertson, Roanoke.
Dr. Hugh H. Trout, Jr., Roanoke.
Dr. Philip Trout, Roanoke.
Dr. Gilman R. Tyler, Richmond.

Appreciation of Col. Sam F. Seeley.

The Directing Board of the Procurement and Assignment Service for Physicians, Dentists, and Veterinarians, has formally expressed its appreciation of the services rendered by Colonel Sam F. Seeley, who has been transferred to military duty. Following is the text of the resolution adopted:

"The transfer of Lieutenant Colonel Sam F. Seeley from his connection with the Procurement and Assignment Service to active military duty causes a great loss. Colonel Seeley who has acted as Executive Officer since the beginning of this Service has been transferred to military duty, which is in keeping with the policy recently adopted by the War Department. His training and experience with the Medical Corps of the Army in his professional capacity amply justifies such a step.

"The Directing Board of the Procurement and Assignment Service wishes to take this opportunity of expressing to the Surgeon General of the United States Army its very deep appreciation for the valuable service which Colonel Seeley has rendered during its period of organization and functions.

"The Directing Board expresses to Colonel Seeley its deep appreciation for the great sacrifice which he has made in dislocating himself from actual military duty to serve with us in an executive capacity. He has been most unselfish, and has given unstintingly of his time, energy, and patience in helping to solve many of the problems connected with the functioning of the Procurement and Assignment Service. He has not only labored faithfully at our office in Washington, but he has traveled over the United States contacting many of his professional confreres and explaining to them the purpose for which the Procurement and Assignment Service was organized. His services have been most valuable and have helped to take us a long way in accomplishing the objectives for which it was created.

"The Directing Board expresses to Colonel Seeley its gratitude and thanks for his unselfish devotion to the organization of the Procurement and Assignment Service and wishes for him the greatest success in his new assignment.

"FRANK H. LAHEY, M.D., *Chairman*
HARVEY B. STONE, M.D.
HAROLD S. DIEHL, M.D.
JAMES E. PAULLIN, M.D.
C. WILLARD CAMALIER, D.D.S."

Book Announcements

Heredity, Food, and Environment in the Nutrition of Infants and Children. GEORGE DOW SCOTT, A.B., B.S., M.D., Consulting Pediatrician to the Lutheran Hospital, New York City, and to the Nassau Hospital, Mineola, L. I., N. Y.; etc. Boston. Chapman and Grimes. 1942. xvii-778 pages. Cloth. Price $5.00.

This is an extraordinary book. It contains the best recipes for stuffed green peppers, pilaf, and zabione of any book on pediatric nutrition I have read. It also offers food for thought to many branches of the medical profession. For instance, the pediatrician will doubtless be interested in learning on page 3; "Up to the present moment, no method of certainty is known for measuring the rate of metabolism except from the child's actions, from his color, etc."; that "This united vigor in the parents depends naturally on their rate of metabolism at time of copulation. . . ."; and that "If the constitution of both parents is at low ebb, paticularly at the time of copulation, the initial strength of the new-born may be weak and pitiful." On page 99 he will also find: "Pediatricians often lend an ear to controversies which arise from time to time as to whether the effects of syphilitic toxins upon the germ plasm can be transmitted over one generation. Such lengthened transmissions, however, appear to be a fact."

The zoologist will learn (p. 4) that "The outward expression of energy is seen in different animals as different colors." and (p. 20) that "Huxley, the biologist, says that male children have one less chromosome than do females."

The pharmacologist will probably wish to read (p. 61): "Thus, for example, digitalis increases the excitability of the receptor fibril of the vagus, while atropin decreases the excitability of the receptor fibril of the vagus and decreases the excitability of the discharging fibrils." On page 104 he will learn "However, nicotine, a very volatile substance, is destroyed in the burning of the tobacco and rarely if ever passes to the body of the smoker."

As a physiologist I was impressed with the statement (p. 61): "When a cell normally performs its functions, when it contracts it discharges an impulse at the same time. This combination of functions is found, for example, in the auriculo-ventricular bundle of the heart. The skin, too, is composed of a great mass of living cells and when a light body or rays of sunshine strike it the cells are stimulated to activity and pass on impulses which travel from cell to cell until the receptor fibrils of the afferent nerves are reached."

The internist will be grateful for the following explanation of appendicitis (p. 132): "This means that the muscular fibers in the mucosa and submucosa are prevented from reacting normally and the mouth of the appendix, instead of being tightly closed, becomes relaxed. In this event it is merely a matter of time for the bacteria in the passing fecal excretion, a part of which drops into the lumen, to become implanted within the body of the appendix."

However, it is the biochemist who will probably learn for the first time (p. 62) that the liver ". . . . absorbs the amino acids of the dissolved protein molecules and combines them with ammonia producing urea and uric acid."; "The kidney cell builds urea from the blood . . . ."; "The poisons given off in the intestines in digesting protein, such as carbonic acid, it accumulates within itself, rendering them harmless by uniting them with sulphuric acid." On page 147 he will discover: "The total carbon-dioxide content of the whole blood is decreased in conditions of non-gaseous acidosis and of non-gaseous alkalosis."

Nor is the bacteriologist slighted, for it is doubtless for his benefit that we find on page 107: "It has been determined also that any of sixty kinds of organisms may be attached to their (flies') bodies. In this list may be mentioned scarlet fever and the familiar but now rare disease, leprosy." And on page 376 he will find that boiling is recommended in cooking fish "since it effectively guards against furunculosis, worms, and perhaps tuberculosis."

The experimetal nutritionist should read (p. 113) that "Guinea pigs readily show the effect of a deficiency of vitamin C, and rats of vitamin A, and to a less extent, vitamin C."

The strain of learning so many novel and startling facts however, was too much for the simple mind of the reviewer, and he was able to cover no more than 150 pages. It is to be heartily regretted that this volume contains no pictures.

R. J. MAIN.

XUM

VIRGINIA MEDICAL MONTHLY

Official Publication of the Medical Society of Virginia

(Founded by Landon B. Edwards, M. D., April, 1874)

WYNDHAM B. BLANTON, M. D.
Editor

AGNES V. EDWARDS
Business Manager

PUBLICATION COMMITTEE
WYNDHAM B. BLANTON, M. D., Richmond, *Chairman*
J. EDWIN WOOD, JR., M. D., University H. S. DANIEL, M. D., Louisa

All correspondence regarding editorial matter, original articles, and policy should be directed to the Editor. Questions relating to subscription rates, advertising, etc., should be addressed to the Business Manager, 1200 East Clay Street, Richmond, Virginia. The MONTHLY is not responsible for the opinions and statements of its contributors. All advertisements are accepted subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association. Annual Subscription, $2.00. Single Copies 25c.

VOL. 69. OCTOBER, 1942. No. 10

Editorials

Sister Kenny's Method

FROM the number of enthusiastic reports that are now appearing in the literature it is hard to believe that less than two years have passed since Miss Kenny's ideas were being pooh-poohed by four out of five experts to whom she appealed for help. It was difficult for physicians to grasp the fact that a nurse, unacquainted with the anterior horn cells of the cord and with the lesions in and around them that characterize the chief pathology of anterior poliomyelitis, a nurse who did not even have the vocabulary to express her new ideas, should have made clinical observations that could upset an important part of the old symptomatology and treatment of this dread disease upon which so many trained physicians and research men had labored for so long with so little result.

Formerly it was held that a flaccid paralysis, without spasm or incoordination, characterized the acute stage of anterior poliomyelitis, and clinicians lost no time calling in orthopedic consultants, who routinely applied splints in an effort to avoid the deformities which they had learned to expect. Miss Kenny's observations, now abundantly confirmed, have changed all this. A new symptomatology has come to be recognized which can be summarized briefly as including muscle spasm, muscle incoordination and mental alienation.

Splints have become taboo, and hot fomentations to spastic muscles, passive motion and muscle re-education constitute the distinctive features of the new treatment. As a result pain and suffering have been almost abolished and deformity is unheard of. The inelastic, fibrosed and shortened muscles which characterized the disease under the earlier treatment are not seen when this method is used. Muscles are now flexible, soft and receptive. Warm extremities replace the cold, clammy hands and feet with which we have been familiar in the past. Stiff and deformed joints do not result. Instead joints have full, free motion.

Sister Kenny's method does not cure, but possibly limits the extent of paralysis, and by the relief of suffering and the prevention of deformity represents a welcome advance in the management of the victims of one of the worst diseases man is heir to.

It is to the credit of the University of Minnesota and the Minneapolis General Hospital that they thought enough of Miss Kenny's ideas to give them a trial when other medical centers showed no interest in her unorthodox concepts. It is to the credit of members of the profession in a number of other medical centers who followed suit when her plan of treatment was better understood. It is pleasing to note that the Department of Orthopedics of the University of Virginia sent Dr. Charles J. Frankel to Minneapolis to observe, and that he has returned prepared to spread the gospel of a plan of treatment which offers so much more than the older methods.

Dr. Frankel writes: ". . . every physician in the state, who has occasion to see the early cases of poliomyelitis, should become acquainted at least with the principles of the Method. Attention must be drawn to the fact that early treatment is important to insure good results. It is also imporant to emphasize that the treatment is not merely the application of hot foments, but more important is the muscle re-education which must be carried out by a physiotherapist, fully trained in the correct method. Halfway measures will be disappointing. Without the fully trained physiotherapist the treatment has only small value." Dr. Frankel also reminds us that the short clinics which are to be held throughout the state (in Richmond, Roanoke, Charlottesville and Norfolk), while they may be instructive, are certainly not able to train thoroughly the personnel necessary to the treatment of the disease.

It is agreed that in the light of our present knowledge of the physiology and pathology of poliomyelitis, the Kenny treatment is purely empirical. A good deal of research work has been and will be stimulated as the method becomes better known throughout the country.

It is important that someone in every community where poliomyelitis is taken care of should familiarize himself with these new methods. It is hoped that other physicians from this state will go to Minneapolis, or perhaps to the University of Virginia where they can see the method in actual operation.

Post Anesthesia Encephalopathies

IT has often been said that if one had to choose between a good surgeon and a poor anesthetist and a good anesthetist and a poor surgeon he would do well to accept the first alternative. This judgment still holds true in spite of the fact that modern anesthesia is apparently attended with so few untoward effects. It may honestly be said that anesthesia is far from being a perfectly safe procedure. If one doubts this, all one has to do is to look through the *Index Medicus* with an eye to the number of deaths and complications listed under this heading.

There is a type of accident which may occur during anesthesia which was discussed extensively in British medical literature about fifteen years ago, and which has had some attention given it by recent American authors. We refer to anoxia. Cyril Courville's monographic article which appeared in the May, 1936, *Medicine* reviews the literature and reports thirteen cases of "asphyxia complicating nitrous oxide anesthesia." Roy McClure and his associates reported to the American Surgical Association at its 1939 meeting at Hot Springs four similar cases, in two of which nitrous oxide had apparently not been given. These authors emphasize preoperative administration of morphine and the barbiturates as important contributive factors. The untoward effects of anesthesia, particularly of nitrous oxide anesthesia, to which we wish to call attention, are generally believed to be the result of temporary anoxia with the

XUM

brain receiving the brunt of the injury. The pathologic physiology of these episodes has been now broken down into a number of morbid stages—anoxic anoxia, stagnant anoxia, anemic anoxia, and histotoxic anoxia. Any one or all four may be encountered. The fault may lie in an oxygen deficiency, arising especially during nitrous oxide anesthesia, where the margin of safety is narrow, and where arterial oxygen tension may suddenly be reduced to the point where the respiratory center is dangerously depressed. The machine, the drug or the anesthetist may be at fault. On the other hand a preexisting anemia may produce a deficiency in the oxygen carrying power of the blood. Injudicious preoperative sedation, especially with the barbiturates, is capable of damaging the cerebral cells, producing a local tissue injury which interferes with their utilization of available oxygen. When a cardiorespiratory collapse is superimposed upon such a background, cellular injury or death from lack of oxygen supervenes with dramatic suddenness.

This chain of circumstances may be responsible for convulsions during anesthesia, for delayed return of consciousness with or without residual symptoms, or for death suddenly or in coma. In other instances none of these effects may be observed immediately, and yet delayed effects may manifest themselves, such as inability to concentrate, loss of memory, as well as various emotional states. These after-effects may be so slow in coming on and are often so slight that they may not be attributed to the aesthesia which provoked them. We do not know of any studies which have been made to discover the full extent of these delayed effects on the brain and its function in persons who have undergone anesthesia. The problem is serious enough, however, to compel surgeons and anesthetists to take stock of themselves, to familiarize themselves thoroughly with the physiologic mechanisms involved in supplying oxygen to the brain and other tissues during anesthesia, to give more consideration to the red blood count of the preoperative patient, to keep preanesthesia sedation within reasonable limits, to be prepared to meet circulatory collapse in the operating room and to be sure that adequate oxygen tension is maintained throughout the administration of the anesthesia.

Keeping Up With the March of Medicine

THE problem of keeping up with medical progress is an old one. The earliest medical journals published in Virginia featured prominently articles attempting to portray the advance of a science which was even then getting beyond the ability of one man to follow. Massed abstracts, special articles and the Year Books have been recent methods of epitomizing our vast medical literature. Within the last month two worthwhile publications have appeared, each designed to portray in a reasonably limited space advances in medicine.

The first is a 292 page volume from the Interscience Publishers, Inc., edited by J. Murray Steele, M.D., of New York. It appears under the title of *Advances in Internal Medicine*. Ten contributors center our attention upon the following advances: the Miller-Abbott tube in the diagnosis and treatment of disorders of the gastrointestinal tract, the use of insulin and protamine zinc insulin, sympathetic nervous control of the peripheral vascular system, the sulfonamides, urinary tract infections, epidemic influenza, the pathogenesis and treatment of hypertension, nephrosis and ariboflavinosis.

The other volume, *Medical Progress Annual,* published by Charles C. Thomas and edited by Robert N. Nye, M.D., is the third of this series to appear. The present volume consists of fifty-two reports on recent accepted advances in diagnosis and treatment, published during the year 1941 in the *New England Journal of Medicine,* and

now brought together by its managing editor under one binding. This is a much more comprehensive review, covering as it does 677 pages. Here one will find the latest concepts of drug allergy, anesthesia, diseases of the peripheral arteries and aviation medicine. Bacteriology, blood chemistry, cardiology, dehydration, dental caries, diabetes and edema are discussed in separate articles. Virus encephalitis, the rôle of the adrenal cortex, endoscopy, the treatment of biliary tract disease, hematology, industrial hygiene, kidney disease, the treatment of meningitis and of pneumonia, neurology and neurosurgery, nutrition and the medical aspects of obstetrics are other chapter headings. Ophthalmology, pathology, pediatrics, pharmacology, physiology and psychiatry are also discussed in separate chapters, indicating the broad base upon which the summary is constructed. Particular interest attaches to those sections of the book which deal with the plasma proteins, diagnostic roentgenology, antipneumococcus serum, the vitamins, and war medicine. There are chapters devoted to tuberculosis, syphilis, thoracic surgery, abdominal surgery, as well as to surgery of the sympathetic nervous system, surgical care and operative technique and surgical shock.

If some physician feels that the medical events of the last year have moved too fast for him, let him take a few days to read these two excellent books. He will then be assured of having his knowledge brought up to date in good fashion and without having been bored in the process.

Societies

The Fairfax County Medical Society

Held its annual meeting on August 11, at the home of Dr. William Meyer in Herndon, with several visitors present. During the business session, the medical defense organization of the county was discussed and the following were elected officers of the Society for the coming year: President, Dr. Elmer Waring of Fairfax; vice-president, Dr. Charles Finnegan of Falls Church; secretary, Dr. Alice Heyl Kiessling (re-elected) of Falls Church; and treasurer, Dr. Emmanuel Newman of Falls Church. Following the meeting, the members and guests adjourned to the old Dranesville Tavern where dinner was served.

Nelson County Medical Society.

At a special meeting of this Society on August the 20th, Dr. Lyddane Miller of Amherst was elected president; Dr. Homer E. Clarke of Massies Mill vice-president; and Dr. J. F. Thaxton of Tye River was re-elected secretary-treasurer. The President's appointment of delegate and alternate to the meeting of the Medical Society of Virginia were affirmed. Other business was a consideration of how to increase the membership and usefulness of the society.

The Wise County Medical Society

Held its regular bi-monthly meeting on September the 4th at Coeburn, starting with a dinner at the Community Club House, as guests of the local doctors. Dr. Joseph R. Blalock, superintendent of Southwestern State Hospital at Marion, was guest speaker, and was introduced by Dr. Bowyer, at request of the president, Dr. W. B. Barton. There was also a motion picture in color on the subject of "Riboflavin Deficiency". Dr. Seymour Pelzer of Calvin was admitted to membership. Dr. C. L. Harshbarger of Norton is secretary.

XUM

News

The State Meeting.

The Medical Society of Virginia is holding its Annual Meeting in Roanoke, beginning Monday, October the 5th, and it is not yet too late to get there and enjoy the program and meeting with friends. Oftentimes meetings are more enjoyable when one does not plan attendance too far in advance. The program is interesting and you should feel well repaid for taking this time from your work. All features of the meeting are to be at Hotel Roanoke.

Personnel Notes from State Health Department

Effective October 1, Halifax and Pittsylvania Counties will be consolidated under the supervision of Dr. D. C. Steelsmith. This unit will be known as the Halifax-Pittsylvania Health District, with headquarters at South Boston.

Dr. Samuel S. Shouse, Health Officer of the Page-Warren-Shenandoah Health District, was granted a leave of absence to enter military service, effective September 8. Dr. M. E. McRae, Health Officer of Pittsylvania County, succeeds Dr. Shouse in this District, October 1, and will have headquarters at Luray.

Dr. C. E. Waller, Health Officer of the Fairfax-Loudoun-Prince William-Stafford Health District, will be relieved of Fairfax, Prince William and Stafford Counties and will remain Health Officer of Loudoun County, effective October 1, with headquarters at Leesburg. He will be succeeded as Health Officer of Fairfax, Prince William, and Stafford Counties, by Dr. James A. Dolce of the U. S. Public Health Service. Dr. Dolce's headquarters will be at Fairfax, and this unit will be known as the Fairfax-Prince William-Stafford Health District.

Dr. E. W. Langs, Assistant Health Officer of the Fairfax-Loudoun-Prince William-Stafford Health District will be transferred to the Giles-Montgomery-Radford Health District as Assistant Health Officer, as of October 1, and will have headquarters at Christiansburg.

Dr. Daniel Hope, Jr., Health Officer of the Alleghany-Botetourt Health District resigned to enter military service, on September 16, and Dr. George C. Snead will take over this work with headquarters at Covington, effective October 16.

Dr. Robert M. Bryant, Jr., will become Assistant Health Officer in the Brunswick-Greensville-Mecklenburg Health District, October 1, and will be located at Lawrenceville.

Dr. Donald K. Freedman of the U. S. Public Health Service will become Assistant Health Officer of the Peninsula Health District, October 1, with headquarters at Hampton.

Dr. John L. Lincoln of the U. S. Public Health Service, recently at Hot Springs National Park, Ark., was assigned to the Hampton Roads Defense Area, Newport News, as Area Venereal Disease Control Officer, September 15.

Dr. Walter B. Quisenberry of the U. S. Public Health Service, also from Hot Springs, Ark., was assigned to the Camp Pickett Area, Farmville, as Area Venereal Disease Control Officer, on September 15.

Dr. Randolph P. Grimm of the U. S. Public Health Service was assigned to the Hampton Roads Defense Area, Norfolk, as Area Venereal Disease Control Officer, September 15.

Married.

Lt. (jg) John Paul Jones, MC., U.S.N.R., and Miss Elizabeth Hyman Adkins, Richmond, September 12th. Dr. Jones is a graduate of the Medical College of Virginia in 1937 and is at present stationed at Bethesda, Md.

Dr. Elmer Shackelford Robertson, Richmond, and Miss Margaret Hannah Armstrong, Hillsville, September 15th. Dr. Robertson graduated from the Medical College of Virginia in 1940.

Lt. John Rogers Mapp, M.C., U.S.A., and Miss Sarah Rebecca Moore, Pageland, S. C., August 21st. Dr. Mapp graduated in medicine from the University of Virginia in 1940 and is affiliated with the University of Virginia Evacuation Hospital, Unit No. 8.

Dr. William Minor Deyerle, Bluefield, W. Va., and Miss Frances Mozelle Hood, Richmond, September 12th. Dr. Deyerle graduated from the University of Virginia, Department of Medicine, in 1940.

Dr. Henry Price Deyerle, Harrisonburg, and Miss Mary Elizabeth Savage, Franklin, August 25th. Dr.

Deyerle received his medical degree from the University of Virginia in 1942 and is now serving an internship at the Roper Hospital, Charleston, S. C.

Miss Dorothy Lenore Suade, Gardner, Mass., and Dr. George Andrew Shetter, Richmond, September 1st. Dr. Shetter is a graduate of the Medical College of Virginia in the class of 1937.

Dr. Archibald C. Randolph, Upperville, and Mrs. Theodora Ayer Winthrop, Middleburg, September 3rd.

Southern Medical Association.

The thirty-sixth annual meeting of the Association is to be in Richmond, November 10, 11 and 12, under the presidency of Dr. M. Pinson Neal of Columbia, Mo. The local committee, headed by Dr. Wyndham B. Blanton, and Mr. Loranz, secretary of the Association, have completed plans for an excellent meeting and a large attendance is expected. There are good hotels in Richmond but, as there are always many Service men coming and going, it would be well, as far as possible, to make reservations in advance. Write Hotel Committee, Southern Medical Association, 109 North 5th Street, Richmond, giving type and price of accommodations desired.

Richmond and Virginia extend a cordial invitation for those who can to attend.

The Southern Psychiatric Association

Is to hold its annual meeting in Richmond, with headquarters at Jefferson Hotel, November 6 and 7, just prior to the meeting of the Southern Medical Association. Dr. Whitman C. McConnell of St. Petersburg, Fla., will preside. Dr. James K. Hall of Richmond is president-elect. Further information about this meeting may be obtained from the secretary, Dr. Newdigate M. Owensby of Atlanta.

News from University of Virginia, Department of Medicine.

Dr. H. B. Mulholland and Dr. Alfred Chanutin attended a four-day course of lectures and demonstrations in Chemical Warfare given in August under the auspices of the Office of Civilian Defense and the Chemical Warfare Service at Edgewood Arsenal, Maryland.

Dr. J. Edwin Wood addressed the James River Medical Society in Scottsville, on July 15th. He discussed the use of certain drugs in heart disease.

On September 2nd, Dr. W. E. Baker spoke before the University of Virginia Medical Society on the subject of Syphilis.

The following changes have occurred in the Medical Faculty of the University of Virginia, effective July 1, 1942:

Dr. H. B. Mulholland has been appointed Assistant Dean;

Dr. Samuel Alexander Vest has been promoted from Associate Professor to Professor of Urology;

Dr. Lawrence T. Royster resigned as Professor of Pediatrics;

Dr. Robert Bennett Bean retired as Professor of Anatomy.

Dr. E. C. Gates,

Chesterfield County Health Officer, has been appointed director of the county OCD emergency medical services.

Dr. D. Lane Elder

Has just been re-elected a member of the Hopewell City Council, of which body he has been a member for twenty-two years. In addition to this, he has been mayor of that city for twenty years.

Peptic Ulcer Film Available.

There is now available for free showings before groups of physicians the first complete movie film on peptic ulcer, in color and with sound track.

The film is entitled "Peptic Ulcer" and was produced under the direction of the Department of Gastroenterology of the Lahey Clinic of Boston. The American College of Surgeons has awarded its seal of approval to the film.

Running time of the film is 45 minutes, 1600 feet of 16 mm. film, and covers a presentation of the following problems of peptic ulcer: Pathogenesis, diagnosis, treatment, pathology, complications, including obstruction, hemorrhage, and perforation, gastric ulcer, surgery and jejunal ulcer.

Arrangements for a showing of the film may be made by writing to the Professional Service Department of John Wyeth and Brother, Inc., Philadelphia, who will provide projection equipment, screen, film, and operator for medical groups, without charge.

Dr. John L. Couper,

Class of '41, University of Virginia, Department of Medicine, after a year at St. Luke's Hospital, New York City, has located in Lexington.

XUM

Luncheon Meeting Changed to Breakfast.

Since publication of the program for the Roanoke meeting of the Medical Society of Virginia, the Alumni Association of the Medical College of Virginia has decided to change its luncheon to a breakfast meeting on Tuesday, October 6th, at 8:00 a.m. This has been done to avoid conflict with other luncheon meetings which some of the alumni might wish to attend.

It is suggested that those who plan to arrive on the early morning train and wish to attend the breakfast, drop a card to Dr. Frank A. Farmer, 307 Medical Arts Building, Roanoke, that a reservation may be made.

Dr. Hubert D. Crow

Has been appointed director of a combined health district unit composed of the counties of Southampton, Isle of Wight, Nansemond and the City of Suffolk, with headquarters at Suffolk. These include the districts formerly under Dr. Crow and Dr. B. R. Allen, who has entered the Service.

Dr. Royster Retires as a Professor at the University.

Dr. Lawrence T. Royster, for a number of years head of the department of pediatrics at the University of Virginia, recently resigned from this position. He was an alumnus of that school and had been head of the pediatric department there since 1923.

The American Academy of Physical Medicine

Will hold its annual scientific session at the Hotel Statler, Boston, October 14 to 17. The program will be composed of clinical and scientific presentations involving techniques of importance in Wartime Medicine.

Speakers will include pioneers in the development of physical medicine in the earlier World War, physicians actively concerned with military medicine, and leaders in the special medical fields. A clinic will be conducted at the Massachusetts General Hospital. The Academy will have the cooperation of the Massachusetts Institute of Technology and other Medical and Scientific Institutions. Captain William Seaman Bainbridge, M.C., U.S.N., is President, and Lt. Col. William D. McFee, M.C., U.S.A.R., chairman of Committee on Program. Physicians are invited to attend without registration fee. A copy of the official program can be obtained from the Secretary-Treasurer, Herman A. Osgood, M.D., 144 Commonwealth Avenue, Boston, Mass.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons

Held its fifty-fifth annual meeting at the Homestead, Hot Springs, Va., September 10-12, under the presidency of Dr. Grandison D. Royston of St. Louis. Dr. Willard R. Cooke of Galveston, Texas, succeeded to the presidency and Dr. Lewis F. Smead of Toledo, former treasurer, was named president-elect. Dr. James R. Bloss of Huntington, W. Va., was re-elected secretary, and Dr. Ward F. Seeley of Detroit was named treasurer. It was voted to discontinue the Spring clinical meetings for the duration but to keep up the annual meetings. Place and time of the next one will be selected by the Board of Directors. Dr. M. P. Rucker, Richmond, only Virginia member, attended this meeting.

Dr. H. L. Baptist,

Formerly of Ivy Depot, has moved to Troutville, where he has taken over practice in a large territory left without a doctor, owing to the departure of Dr. S. F. Driver for military duty.

Dr. D. F. Love,

Recently of New Market, announces his return to Harman in Buchanan County.

To Speak Before Southern T. B. Conference.

Dr. Dean B. Cole of Richmond, a member of the board of directors of the Virginia Tuberculosis Association, will present a paper before the Southern Tuberculosis Conference in Memphis, October 5-7, his subject being "Pleurisy and Effusion".

Dr. Charles P. Cake of Arlington, another director of the Virginia Association, will conduct an x-ray clinic at this meeting.

Associate Physician at St. Albans Sanatorium.

Dr. James K. Morrow of Little Rock, Ark., is now associated with St. Albans Sanatorium, Radford, having succeeded Dr. Wiley D. Lewis who has entered the U. S. Army Medical Corps.

West Virginia State Medical Association.

At its meeting held during the summer at Huntington, Dr. Richard O. Rogers of Bluefield succeeded to the presidency and Dr. Robert J. Wilkinson of Huntington was named president-elect.

Dr. Marshall T. Vaden

Has been appointed chief of the emergency medical service for Buena Vista and Rockingham County according to an announcement from the State office of civilian defense.

Dr. Garland M. Harwood,

Richmond, has been appointed acting medical director of the Life Insurance Company of Virginia, taking over the duties of Dr. Ennion S. Williams who recently resigned to enter the Navy.

New Books.

The following are recent acquisitions to the Library of the Medical College of Virginia and are available to our readers, the only cost being return postage:

A.A.A.S.—Relapsing fever in the Americas.
Anderson & Arnstein—Communicable disease control.
Atkinson, M.—Behind the mask of medicine.
Bogert, L. J. Nutrition and physical fitness.
Bourne, G.—Nutrition and the war.
Culbertson, J. T.—Immunity against animal parasites.
Duke-Elder, W. S.—Textbook of ophthalmology. volume 3.
Duncan, G. C. ed.—Diseases of metabolism.
Ebaugh & Rymer—Psychiatry in medical education.
Eliason, E. L.—First aid in emergencies.
French, T. M.—Psychogenetic factors in asthma.
Greenhill, J. P.—Obstetrics in general practice.
Harkins, H. N.—The treatment of burns.
Hoff & Fulton—A bibliography of aviation medicine.
Levine, S. A.—Clinical heart disease.
Master, A. M.—Electrocardiogram and x-ray configuration of the heart.
Roddis—A short history of nautical medicine.
Schoenheimer, R.—The dynamic state of body constituents.
Sherman & Pearson—Modern bread from the viewpoint of nutrition.
Steincrohn, P. J.—You don't have to exercise.
Walls, G. L.—The vertebrate eye and its adaptive radiation.

The 30th Annual Report of St. Elizabeth's Hospital, Richmond,

Recently published, includes a record of all patients admitted to this hospital during 1941, a list of the publications by the staff, the statistics of the School of Nursing, of the Out-Patient Department, and the Clinical laboratory. This is followed by a record of the diagnosis and the operative treatment of patients admitted to the hospital. The usual detailed critical resume of the deaths is given. The report of the dietary department, which was first given in 1940, shows the same type of work being done with a high percentage of special diet trays.

In the listings of the staff it is noted that several of its members have been called to military or naval services, and that there have been changes in the nursing staff. The number of scientific publications by the staff is somewhat larger than it has been in recent years.

For the past four or more years there has been a gradual increase in the number of patients admitted to the hospital, the 1,606 admitted in 1941 being the largest number recorded.

There were only 47 deaths in 1941, a percentage of 2.9 as compared to 52 deaths in 1940 with a percentage of 3.38 In these 47 deaths there were 40 necropsies (85 per cent) as compared with 36 necropsies (69 per cent) in 52 deaths in 1940.

Graduate Fortnight in New York City.

The annual Graduate Fortnight of the New York Academy of Medicine will be held October 12 to 23 in New York City. The subject this year is to be "Disorders of the Nervous System". There will be panel discussions in the mornings, hospital clinics in the afternoons, evening addresses, and scientific exhibits and demonstrations.

Admission to the Graduate Fortnight is by registration card only, this being limited to the medical profession. Physicians, not members of the Academy, will be sent registration cards upon receipt of check of $5.00, payable to the New York Academy of Medicine, 2 East 103rd Street, New York, N. Y.

American Board of Obstetrics and Gynecology.

The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on February 13, 1943. Candidates who successfully complete this proceed automatically to the Part II examination held later in the year. All applications must be in the office of the Secretary by November 16, 1942.

Effective this year there will be only one general classification of candidates, all now being required to have been out of medical school not less than eight years, and in that time to have completed an approved one year general rotating internship and at least three years of approved special formal training, or its equivalent, in the seven years following the interne year. All candidates must be full citizens of the United States or Canada before being eligible for admission to examinations.

For further information and application blanks, address Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

XUM

For Sale.

Small (Little Giant) x-ray machine, diathermy machine, violet ray machine, ultra violet ray machine, and other office equipment. Write "X-Ray", care this journal, 1200 East Clay Street, Richmond. (*Adv.*).

Obituaries

Dr. Alexander Watkins Terrell,

Beloved physician of Lynchburg, died August 30th. He was eighty-one years of age and a graduate of the former Hospital College of Medicine, Louisville, in 1886. Dr. Terrell had practiced in Lynchburg for fifty-six years and was said to have been the first physician to use x-ray there. He had been physician to Randolph-Macon College since it was founded in 1892, and was a member of the Medical Society of Virginia for fifty-five years. As a token of affection and esteem Dr. Terrell was honored by a testimonial dinner in 1936, attended by over two hundred prominent business and professional men of Lynchburg, in recognition of fifty years of practice in Lynchburg and his service to the College. He is survived by several children. A brother is Dr. Thomas Terrell also of Lynchburg.

Dr. Joseph Lynn Deitrick,

Prominent physician of Ocean View, died August 29th after a brief illness. He was seventy-four years of age and a graduate in medicine from the University of Maryland in 1891. Dr. Deitrick practiced for sometime in Hanover County before going to Ocean View. He had been a member of the Medical Society of Virginia for forty-nine years. His wife and five children survive him.

Dr. Luther M. Abbott,

Well known physician of New Castle, died on August 16th after an illness of several months. He was seventy-two years of age and a graduate of the former Baltimore Medical College in 1898. Dr. Abbott had practiced for nearly half a century at New Castle, and had been a member of the Medical Society of Virginia for a number of years. His wife and three children survive him.

Dr. Joseph H. Winfrey,

For many years a prominent physician in Hanover County, died September the 7th. He was a native of Buckingham County and seventy years of age. He graduated from the former University College of Medicine in Richmond in 1899 and practiced for a couple of years in Albemarle County before locating at Glen Allen in 1902. He had been a member of the Medical Society since the year following his graduation. Dr. Winfrey was active in the church work of his community and was also a member of the Laurel Lodge of Odd Fellows. His wife and three daughters survive him.

Dr. Thomas Lea Brooks,

Well known physician of Oceana, died August 21st. He was sixty-five years of age and had been in bad health for sometime. He graduated from the former University College of Medicine in 1899, and had been a member of the Medical Society of Virginia since 1914.

Dr. Benjamin Alonza Rice,

Of Forest, for a number of years a well known physician of Bedford County, died June 16 of coronary thrombosis. Dr. Rice was sixty-three years of age and graduated from the Medical College of Virginia in 1904. He joined the Medical Society of Virginia the same year and had attended many of its sessions. He served as a captain in the medical corps during World War I and was associated with the Surgeon General's office in Washington. He was later on the staff of the U. S. Veterans' Hospital at New Haven, Conn. His wife and a son survive him.

Dr. E. H. Shackleford,

Widely known osteopath of Richmond, and for more than twenty years a member of the State Board of Medical Examiners, died September the 14th. He was a native of Missouri but moved to Richmond in 1900 and had since practiced his profession in this city. He was a former president of the Virginia Osteopathic Association and served for a term as a trustee of the American Osteopathic Association.

Commander Julian T. Miller,

Medical Corps, U.S.N., retired, died at his home in Portsmouth, September 21, at the age of seventy. He was a native of Alexandria and graduated in medicine from the University of Virginia in 1892. Dr. Miller had made his home in Portsmouth for the past thirty-five years and, during his retirement, served for nearly two years as director of Public Welfare in Portsmouth, resigning in February, 1941. His wife and a daughter survive him.

McGUIRE CLINIC

ST. LUKE'S HOSPITAL

RICHMOND, - - - - - - - - - VIRGINIA

. . . MEDICAL AND SURGICAL STAFF . . .

General Medicine
JAMES H. SMITH, M.D.
HUNTER H. McGUIRE, M.D.
MARGARET NOLTING, M.D.
JOHN P. LYNCH, M.D.

Orthopedic Surgery
WM. TATE GRAHAM, M.D.
JAMES T. TUCKER, M.D.

Pathology
J. H. SCHERER, M.D.

Urology
AUSTIN I. DODSON, M.D.
CHAS. M. NELSON, M.D.

Otolaryngology
THOS E. HUGHES, M.D.

General Surgery
STUART McGUIRE, M.D.
W. LOWNDES PEPLE, M.D.
WEBSTER P. BARNES, M.D.
PHILIP W. ODEN, M.D.

Obstetrics
H. C. SPALDING, M.D.
W. HUGHES EVANS, M.D.
JAMES M. WHITFIELD, M.D.

Roentgenology
J. LLOYD TABB, M.D.

Dental Surgery
JOHN BELL WILLIAMS, D.D.S.
GUY R. HARRISON, D.D.S.

Ophthalmology
FRANCIS H. LEE, M.D.

TUCKER HOSPITAL

212 West Franklin Street
(corner of Madison)
RICHMOND, VIRGINIA

Private hospital for neuropsychiatric and endocrine cases under the charge of Drs. Beverley R. Tucker, Howard R. Masters and James Asa Shield.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

JEFFERSON HOSPITAL AND TRAINING SCHOOL FOR NURSES

ROANOKE, VIRGINIA

A Fully Equipped General Hospital for the Care of Medical and Surgical Cases

No Drug Habitues, Contagious or Mental Cases received

For further information address JAS. A. ARMSTRONG, Superintendent.

ST. ELIZABETH'S HOSPITAL

RICHMOND, VIRGINIA

STAFF

J. SHELTON HORSLEY, M. D.---Surgery and Gynecology
GUY W. HORSLEY, M. D.---General Surgery and Proctology
DOUGLAS G. CHAPMAN, M. D.---Internal Medicine
WM. H. HIGGINS, M. D.---Consultant in Internal Medicine
AUSTIN I. DODSON, M. D.---Urology
CHARLES M. NELSON, M. D.---Urology
FRED M. HODGES, M. D.---Roentgenology
L. O. SNEAD, M. D.---Roentgenology
R. A. BERGER, M. D.---Roentgenology
HELEN LORRAINE---Medical Illustration

VISITING STAFF

HARRY J. WARTHEN, JR., M. D.---Surgery
W. K. DIX, M. D.---Internal Medicine
JAMES P. BAKER, JR., M. D.---Internal Medicine
MARSHALL P. GORDON, JR., M. D.---Urology
HOWELL F. SHANNON, D. M. D.---Dental Surgery

ADMINISTRATION

N. E. PATE---Business Manager

The Operating Rooms and all of the Front Bedrooms are completely Air-Conditioned.

SCHOOL OF NURSING

The School of Nursing is affiliated with Johns Hopkins Hospital School of Nursing in Baltimore for a three months' course each in Pediatrics and Obstetrics. Address: DIRECTOR OF NURSING EDUCATION.

STUART CIRCLE HOSPITAL

413-21 Stuart Circle

RICHMOND, VIRGINIA

Medicine:
Alexander G. Brown, Jr., M. D.
Osborne O. Ashworth, M. D.
Manfred Call, III, M. D.
M. Morris Pinckney, M. D.
Alexander G. Brown, III, M. D.

Obstetrics:
Ben H. Gray, M. D.
Wm. Durwood Suggs, M. D.
Spotswood Robins, M. D.

Ophthalmology, Otolaryngology:
Clifton M. Miller, M. D.
W. L. Mason, M. D.

Pediatrics:
Algie S. Hurt, M. D.
Chas. Preston Mangum, M. D.

Physiotherapy:
Elsa Lange, B. S., Technician

Surgery:
Charles R. Robins, M. D.
Stuart N. Michaux, M. D.
A. Stephens Graham, M. D.
Charles R. Robins, Jr., M. D.

Urological Surgery:
Frank Pole, M. D.
Marshall P. Gordon, Jr., M. D.

Oral Surgery:
Guy R. Harrison, D. D. S.

Pathology:
Regena Beck, M. D.

Roentgenology and Radiology:
Fred M. Hodges, M. D.
L. O. Snead, M. D.
R. A. Berger, M D.

Executive Director:
Herbert T. Wagner, M. D.

PINE CREST HEALTH RESORT

Southern Pines, North Carolina

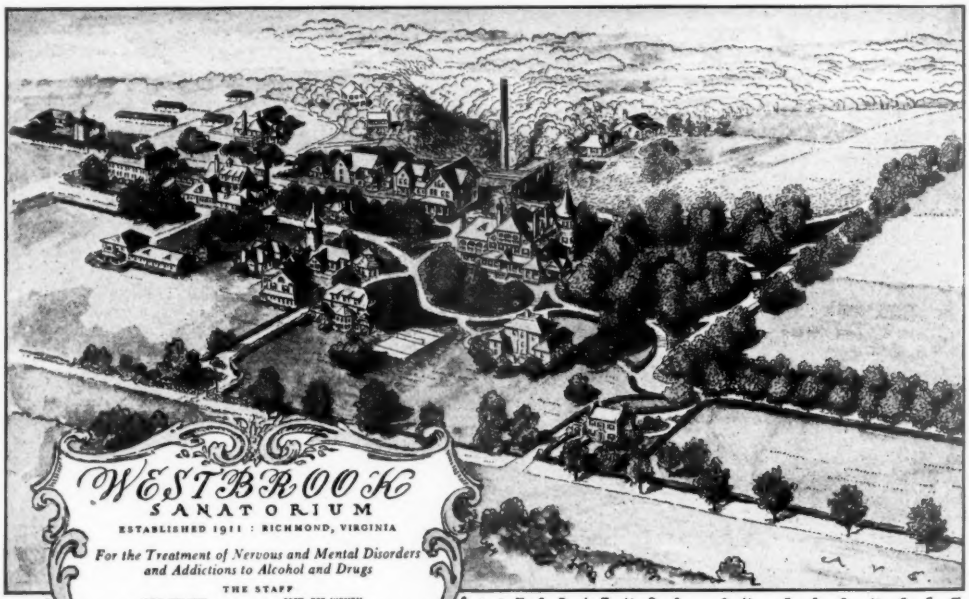
FOR THAT LONG NEEDED REST

Exclusive, All conveniences, Newly furnished, COOL. Rooms, apartments and cottages, private baths. Adjourning Country Club and overlooking Golf Course. Just off U. S. Highway No. 1 and on Seaboard Airline R. R. $25.00 weekly including meals. Special rate—two or more.

For reservations phone Southern Pines 8081 or write Manager, Box 940.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM


WESTBROOK
SANATORIUM
ESTABLISHED 1911 : RICHMOND, VIRGINIA
For the Treatment of Nervous and Mental Disorders and Addictions to Alcohol and Drugs
THE STAFF
DEPT. FOR MEN
JAS. K. HALL, M.D.
DEPT. FOR WOMEN
PAUL V. ANDERSON, M.D.
ASSOCIATES
O. D. DARDEN, M.D. EDWARD H. WILLIAMS, M.D.
ERNEST H. ALDERMAN, M.D. REX BLANKINSHIP, M.D.
LITERATURE ON REQUEST

Gill Memorial Eye, Ear and Throat Hospital, Inc.

ROANOKE, VIRGINIA

STAFF

DR. ELBYRNE G. GILL
DR. JAMES H. GRESSETTE

Resident Physician
DR. W. HAROLD BELL

GEORGE P. STONE, B.S.
Laboratory and X-ray Technician

DORIS JANES, B.S.
MARGARET WALROND, A.B.
Research Technicians

AUDREY WAGNER, R.N.
Superintendent

A Modern, Fireproof Hospital, Specially Designed and Equipped for the Medical and Surgical Care of Ophthalmology, Oto-laryngology, Facio-Maxillary Surgery, Bronchoscopy and Esophagoscopy.

Complete Laboratory and X-Ray Equipment.

Physicians and Graduate Nurses in Constant Attendance.

The Hospital offers a residentship of three years to a graduate of an approved medical school, who has had an internship of at least one year in an approved hospital.

For further information, address

Superintendent, Box 2467, Roanoke, Virginia

SAINT ALBANS SANATORIUM

RADFORD, VIRGINIA

A private institution for the diagnosis and treatment of nervous and mental disease, alcoholism and those requiring general up-building.

FRANK A. STRICKLER, M. D. WILEY D. LEWIS, M. D. JAMES P. KING, M. D.

JOHNSTON-WILLIS HOSPITAL

RICHMOND, ✦ VIRGINIA

A MODERN GENERAL HOSPITAL
PRIVATELY MANAGED
SITUATED IN THE QUIET OF THE WEST END RESIDENTIAL SECTION

Medical College of Virginia

Hospital Division
Richmond, Virginia

Single private rooms and rooms for two and four patients on the private floors are provided at reasonable rates.

Accommodations for treatment of patients in public wards are also available.

Medical College of Virginia Hospital
Dooley Hospital
Saint Philip Hospital
Outpatient Department

LEWIS E. JARRETT, M.D., *Director*

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

The Sanitarium

"EXCLUSIVELY for ALCOHOLISM"

Offering a Treatment for Alcoholism. Formulated to relieve the craving for alcoholic liquors within three to five days, with re-education working toward permanent abstinence after patient is discharged from the Sanitarium. Patient then returns to his own physician once a week for eight weeks for examination and Supportive Treatments. HOMELIKE ATMOSPHERE. Registered Graduate Nurses highly trained in this field and working under supervision of the Medical Director. Physicians are invited to observe the method of treatment.

JAMES S. MILLIKEN, M. D.

Telephone 8071 or Write Business Manager Box 940 for Details

Southern Pines

NORTH CAROLINA

XUM

THE NEW YORK POLYCLINIC
MEDICAL SCHOOL AND HOSPITAL

(Organized 1881)

(The Pioneer Post-Graduate Medical Institution of America)

For the

General Practitioner

Intensive full time instruction in those subjects which are of particular interest to the physician in general practice. The course covers all branches of Medicine and Surgery.

Proctology, Gastro-Enterology

and ALLIED SUBJECTS

For Information Address

MEDICAL EXECUTIVE OFFICER, 345 West 50th Street, New York City

---

Every Virginia Doctor Should Have These Books!

The history of medicine in the Old Commonwealth from Jamestown to the beginning of the present century is a work every doctor should be proud to own. Complete and intensely interesting.

Medicine In Virginia

In 3 Volumes

Published under Auspices of

Medical Society of Virginia

Reduced price to members of the Medical Society of Virginia

3 Volumes for $9.75

(formerly $14.00)

1st Volume—17th Century—$2.75
2nd Volume—18th Century—$3.50
3rd Volume—19th Century—$3.50

Order through

Medical Society of Virginia

1200 East Clay Street,

Richmond, Virginia.

COOK COUNTY GRADUATE SCHOOL OF MEDICINE

(IN AFFILIATION WITH COOK COUNTY HOSPITAL)

Incorporated not for profit

ANNOUNCES CONTINUOUS COURSES

SURGERY—Two weeks Intensive Course in Surgical Technique with practice on living tissue, every two weeks throughout the year. General Courses of One, Two, Three and Six Months; Clinical Courses; Special Courses.

MEDICINE—One Month Course in Electrocardiography and Heart Disease starting the first of every month, except December.

FRACTURES & TRAUMATIC SURGERY — Informal course available every week.

GYNECOLOGY — Informal Clinical and Diagnostic Courses every week.

OBSTETRICS—Informal Clinical Course every week.

OTOLARYNGOLOGY — Clinical and Special Courses every week.

OPHTHALMOLOGY — Informal Clinical Course every week.

ROENTGENOLOGY — Courses in X-ray Interpretation, Fluoroscopy, Deep X-ray Therapy every week.

UROLOGY—Two Weeks Course and One Month Course available every two weeks.

CYSTOSCOPY—Ten Day Practical Course every two weeks.

GENERAL, INTENSIVE AND SPECIAL COURSES IN ALL BRANCHES OF MEDICINE, SURGERY AND THE SPECIALTIES.

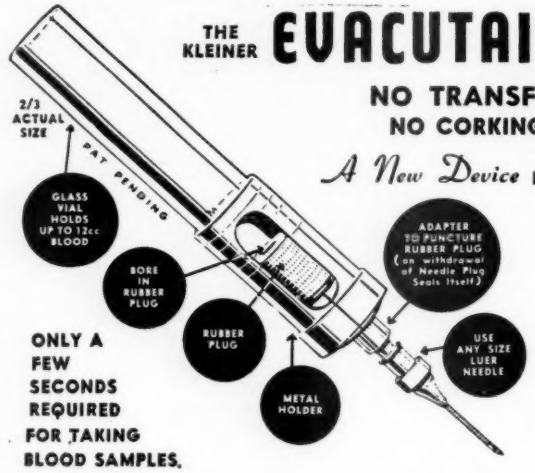
TEACHING FACULTY—ATTENDING STAFF OF THE COOK COUNTY HOSPITAL

Address—Registrar, 427 S. Honore Street,

CHICAGO, ILLINOIS

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM


2/3 ACTUAL SIZE
PAT. PENDING
GLASS VIAL HOLDS UP TO 12cc BLOOD
BORE IN RUBBER PLUG
RUBBER PLUG
METAL HOLDER
ADAPTER TO PUNCTURE RUBBER PLUG (on withdrawal of Needle Plug Seals Itself)
USE ANY SIZE LUER NEEDLE

THE KLEINER **EVACUTAINER** Simplified HEMAXIS TUBE

NO TRANSFERRING OF BLOOD
NO CORKING • NO RESEALING

A New Device **FOR TAKING BLOOD SAMPLES**

ONLY A FEW SECONDS REQUIRED FOR TAKING BLOOD SAMPLES.

SIMPLE PROCEDURE

1. Insert Needle into vein.
2. Press down gently but firmly on vial to puncture plug.
3. Vacuum in vial draws the blood.
4. Draws as much blood as desired.
5. Punctured rubber plug ***re-seals itself.***
6. Ready for label identification . . . no resealing necessary.
7. All metal parts can be used over and over again

WRITE FOR DETAILED LITERATURE AT ONCE

POWERS & ANDERSON

Richmond Norfolk Lynchburg Roanoke, Va.

TODAY'S BEST BUY U. S. WAR BONDS

Professional Stationery

Doctors! Send us your orders for Letter Heads, Envelopes, Bills, and other printing needs. We assure you of Excellent Service, Fine Quality Work and Right Price. Will be glad to send prices if you will send us samples of your needs mentioning quantities ordered. Mail them NOW.

THE WILLIAMS PRINTING COMPANY

11-13-15 N. Fourteenth Street Richmond, Va.

Will smallpox continue to decline in 1942?

SMALLPOX VACCINE

Lederle

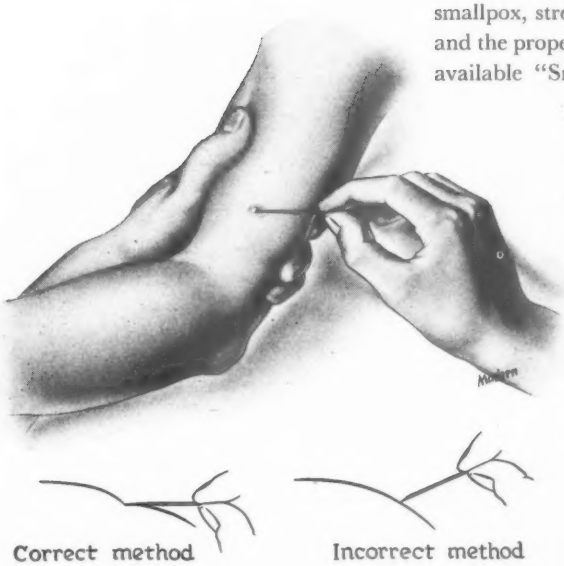
THE new "low" in smallpox incidence reached in this country in 1941 compares most favorably with the perennially high incidence reported in previous years:[1]

	1941	Median 1936-40
SMALLPOX.....	1,368	9,574

However, we are still far too tolerant of this dangerous disease.

To avert the possible increase in the incidence of infectious diseases, which history has shown is fostered during war time, our government recently made the commendable move of advising the immunization of all children over 6 months of age against smallpox. The success of this program, however, depends on the cooperation of every practitioner, public health official and local governing body alike.

TOOMEY,[2] in a recent analysis of active immunity in smallpox, stressed the integrity of the immunizing agent and the proper technique of vaccination. Lederle now has available "Smallpox Vaccine *Lederle*" which has been further improved by the addition of Brilliant Green (reducing the bacterial count of the virus). The "take" with this product is quite satisfactory and its viability has not been diminished as compared with glycerinated vaccine cured without the dye.



Correct method Incorrect method

[1]Pub. Health Rep. 57:23,24 (Jan. 2) 1942.
[2]TOOMEY, J. A.: J. A. M. A. 119:18 (May 2) 1942.

PACKAGES
"Smallpox Vaccine *Lederle*" (U. S. P.)
1, 5 and 10 vaccinations
"Smallpox Vaccine *Lederle*" (Preserved with Brilliant Green)
1, 5 and 10 vaccinations

Supplied in glass capillary tubes, with sterile steel needle for each vaccination.

LEDERLE LABORATORIES, INC., 30 Rockefeller Plaza, New York, N. Y.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

TO AID IN THE WAR EFFORT

It is the Patriotic Duty of every Physician to guard the health of the civilian population, now, as never before.

BIOLOGICS
for Immunization

●

DIPHTHERIA TOXOID
Alum Precipitated

DIPHTHERIA-TETANUS TOXOID
(Combined) Alum Precipitated

PERTUSSIS VACCINE
10,000 million killed organisms
20,000 million killed organisms

SMALLPOX VACCINE
(Vaccine Virus)

TETANUS TOXOID
Alum Precipitated

TYPHOID VACCINE
Plain or Combined

Literature and Prices upon Request

No initials

are set down

on prescriptions

for pharmaceuticals

more often . . .

none inspire

greater faith

in their merit

than . . .

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

Liver Extract Squibb

- LOW IN TOTAL SOLIDS
- EXCEPTIONALLY CLEAR

IN PERNICIOUS ANEMIA, Liver Extract in adequate dosage will produce a prompt reticulocyte response and hematologic recovery. Once dosage requirements have been established and the blood picture returned to normal, administration may be reduced to two- or three-week intervals.

Concentrated Liver Extract Squibb (15 units injectable per cc.) offers the advantages of being low in total solids, and exceptionally clear and light colored. Its high concentration affords low dosage volume and may save the patient considerable discomfort. Furthermore, cost of maintenance is appreciably less than with effective doses of liver principle given orally. It is available in 3x1-cc. vial packages and in 5-cc. and 10-cc. vials.

Liver Extract Squibb is a sterile, aqueous solution, obtained from edible liver. Both the regular and concentrated potencies are standardized on the basis of the hematopoietic response in pernicious anemia as defined by the U.S.P. Anti-Anemia Preparations Advisory Board. This Board has ruled that at present a strength greater than 15 units per cubic centimeter will not be assigned to a preparation because of the possibility of loss, during the concentration process, of unknown factors of value in the treatment of patients with pernicious anemia.*

Solution Liver Extract Squibb (3.3 units injectable per cc.) is especially prepared. It is *not* made by diluting Concentrated Liver Extract. It is available in 10-cc. vials.

* N. N. R. 1941, p. 328.

For literature address Professional Service Department, 745 Fifth Ave., New York, N. Y.

E·R·SQUIBB & SONS

Manufacturing Chemists to the Medical Profession Since 1858

TWO POTENCIES

3.3 units (injectable) per cc.
15 units (injectable) per cc.
Preservative—0.5 per cent phenol

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM

Announcing

a supplemental aluminum therapy

Phosphaljel®

WYETH'S ALUMINUM PHOSPHATE GEL

Aluminum hydroxide gel is accepted therapy in the management of peptic ulcer . . . Its impressive record of effectiveness suggested the development of an alternate aluminum preparation to meet particular requirements in certain cases.†

Phosphaljel, Wyeth's Aluminum Phosphate Gel, was originated by Wyeth and was used experimentally in the first successful attempt to prevent postoperative jejunal ulcer in Mann-Williamson dogs. Some animals were allowed to develop Mann-Williamson ulcers and the effectiveness of Phosphaljel was further demonstrated when its administration was followed by prompt healing of these lesions in every case.[1]

In man, Phosphaljel was found to be most effective in peptic ulcer following gastrojejunostomy, a condition which appears to be analogous to the Mann-Williamson ulcer in dogs.[1]

These results suggest that Phosphaljel is indicated in those cases of peptic ulcer associated with a relative or absolute deficiency of pancreatic juice, diarrhea or a low phosphorus diet.

The suggested dosage of Phosphaljel is one, or occasionally, two tablespoonfuls every two hours during the active stage of the ulcer. Later in the course of management, three tablespoonfuls with meals and at bedtime or two tablespoonfuls six times daily with or between meals is recommended. Wyeth's Aluminum Phosphate Gel is supplied in twelve fluid ounce bottles and is available at all pharmacies.

†Phosphaljel is accepted for use in the treatment of peptic ulcer associated with a relative or absolute deficiency of pancreatic juice, diarrhea or a low phosphorus diet.

ACCEPTED AMERICAN MEDICAL ASSN.

Phosphaljel contains 4% aluminum phosphate and possesses antacid, astringent and demulcent properties analogous to those of aluminum hydroxide gel.

[1]*Fauley, G. B.; Freeman, S.; Ivy, A. C.; Atkinson, A. J., and Wigodsky, H. S.: Aluminum Phosphate in the Therapy of Peptic Ulcer, Arch. Int. Med.* **67**: *563-578 (March) 1941.*

PHOSPHALJEL

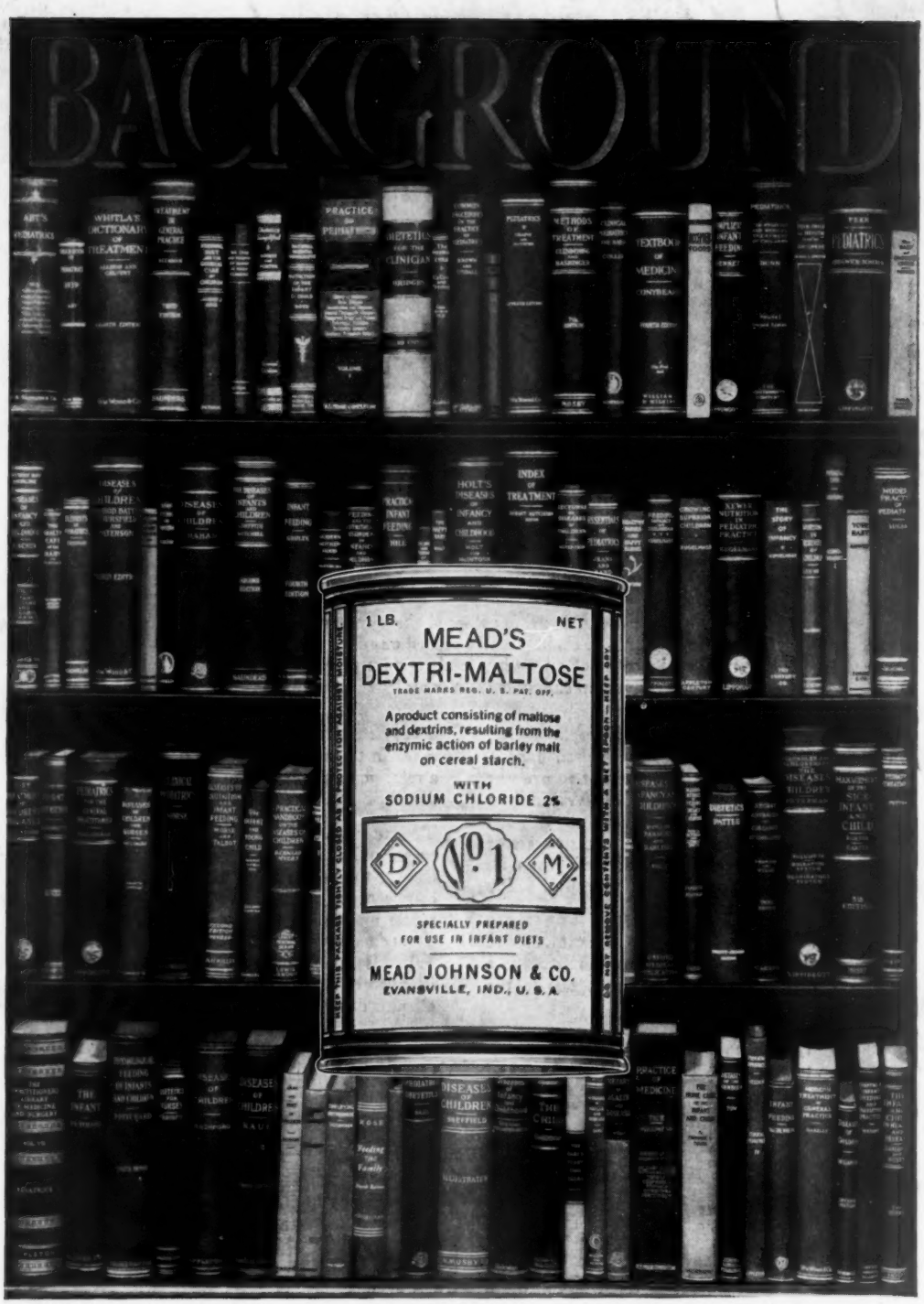
Wyeth's Aluminum Phosphate Gel

*Reg. U. S. Pat. Off.

JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.

XUM



THE use of cow's milk, water and carbohydrate mixtures represents the one system of infant feeding that consistently, for three decades, has received universal pediatric recognition. No carbohydrate employed in this system of infant feeding enjoys so rich and enduring a background of authoritative clinical experience as Dextri-Maltose.

In writing advertisers, please mention VIRGINIA MEDICAL MONTHLY.